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MONTHLY REPORT

OF THE

DEPARTMENT OF AGRICULTURE

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MONTHLY REPORT.

DEPARTMENT OF AGRICULTURE,
Statistical Division, March 13, 1873.

SIR: I herewith present for publication a digest of the returns of the March circular of the Statistical Division, showing the extent to which rotation is practiced in the country, and in what its courses consist; the methods of fertilization and soil amelioration practiced; hints of the relative profit of the different branches of farming, and the comparative practice of a restorative system; the comparative value of farm lands, and the causes of discouragement existing, and remedies proposed. Accompanying are reports of the work of other Divisions of the Department.

J. R. DODGE,
Statistician.

Hon. FREDERICK WATTS,
Commissioner.

CONDITION OF AMERICAN AGRICULTURE.

It has seemed important to obtain facts showing the present status of our agriculture, especially with reference to such vital points as rotation, soil-improvement, and the present comparative profit of its principal crops. It was not expected that so large a subject could be treated exhaustively, but it seemed probable that the views and facts of the farmers themselves, presented in homely garb, might at least furnish a glimpse of the truth upon the great questions involved. The following list of queries elicited responses from regular correspondents of more than half the counties of the United States:

1. Is systematic rotation practiced by any portion of the farmers of your county? If so, what proportion of the whole number, of how many years does the course consist, of what crops, in what order, and with what preparation of soil for each?
2. With those whose practice cannot in any sense be described as a rotation, what crops are most grown, with what preparation, and how many years in succession is any crop cultivated?
3. What efforts toward soil-improvements are made? What fertilizers used, and to what extent—"commercial," barn-yard, or green-soiling? Is "clovering" practiced; and, if so, how, and to what extent?
4. What proportion of your farmers consume the larger portion of their field products upon the farm? Give illustrations, with accurate figures, of the comparative profit of *selling* and *feeding* hay and grain.
5. What branch of farming (as the growing of corn or wheat, the raising of stock, or production of wool or meat, dairying, fruit-growing, market-gardening, &c.) is at present deemed most profitable, and why?
6. Are farm-lands increasing or decreasing in value at present, and what is the average market-value of farms compared with their value in 1860?
7. What causes of discouragement exist among farmers, and what suggestions of remedies can you make? What form of co-operation or combination will aid in giving effect to such remedies?

SYSTEMATIC ROTATION OF CROPS.

A thorough system of crop-rotation is found in but few counties of New England, and in these the routine varies. The large number of towns and cities creates a demand for dairy and market-garden products which do not admit of any rotation. In some counties systematic rotation, and, in fact, systematic farming of any kind is pronounced "out of the question." Farming is here pursued upon too small a scale, or in subordination to some other calling, such as manufacturing, lumbering, &c. A tendency to indefinite repetition of the same crop is strongly developed in many localities. A few small farmers repeat corn and small grain, as they allege, with good results, but such cases are exceptional. Others plant potatoes every year. In Coos County, New Hampshire, India wheat is said to produce twenty successive good crops where the land has been annually manured. In Hampshire County, Massachusetts, tobacco has been raised for twenty years on the same land, highly fertilized. In Hartford County, Connecticut, this crop has been treated with domestic and commercial fertilizers to the amount of $200 to $300 per acre, securing returns of $600 to $1,200 per acre. In Rhode Island field-crops of onions are repeated from five to eight years, or until the smut destroys them.

The high prices of hay, averaging $25 per ton in the Boston market, keep a large area of land in grass. Very frequently the sod is broken up only at long intervals, either for reseeding in timothy or clover, or for a brief alternation of root or grain crops, to rest the land and prepare it for a new departure in grass-cropping. The period is lengthened by heavy annual top-dressing with barn-yard manure and plaster. In Newport County, Rhode Island, meadows are kept growing for ten or twelve years, by a liberal application of sea-weed every year. Here, however, the white worm, a larva of the May beetle, frequently destroys the grass in two or three years from seeding.

In some counties a three years' course—1. corn; 2. potatoes; 3. wheat—is practiced. In others corn is followed by small grain, and subsequently by several crops of grass, extending the course to 6 or 8 years, as in some localities in Rhode Island. The sod is sometimes top-dressed with manure before breaking for root or grain crops. Grass seed is commonly sown with small grain.

Systematic manuring is reported as the rule in three counties in Maine two in New Hampshire, one in Massachusetts, two in Rhode Island, and two in Connecticut. The periods range from three to ten years, Generally sod is broken for corn or potatoes, which are followed by small grain and then by grass for several years. In these counties cultivation is generally very thorough, the land being sometimes plowed to the depth of 6 inches and subsoiled 12 inches. Unprogressive farmers sharply criticise the subsoil process, but its results are stated to be very satisfactory, retaining the strength of the manure and saving subsequent cultivation.

In the Middle States systematic rotation is pursued to a greater extent and with more marked results than in any other part of the country, yet here special industries very largely interfere with the routine. About a third of the reported counties in New York pursue a regular and uniform system; another third pursue a partial rotation, while the remainder seem to ignore it entirely. The following remarks of our correspondent in Seneca will give some idea of the first class:

Comparatively few ignore rotation and practice slip-shod farming; that class soon drops out. Two general courses are pursued by intelligent farmers: the first is to

turn over a piece of clover or clover and timothy sod for corn; the next spring the field is plowed again and sown to oats or barley; in the fall the ground is again turned over and fitted for winter-wheat, receiving a top-dressing of barn-yard manure. The next spring the winter-wheat is seeded to clover or clover and timothy and allowed to remain in clover for one to three years, when the foregoing process is again repeated. The second course is to spread during the winter all the available manures made upon the farm on a piece of sod intended for corn; turn early and harrow thoroughly at proper time to plant to corn, then follows the rotation as practiced in the first case.

Near the large cities the market-garden system prevails, while in the rural districts large areas are devoted to dairying and cheese factories. In the latter the leading aim is to secure as large an amount of forage crops as possible.

Even in those countries where farming is intelligent and systematic, there still exists a class of so-called farmers, whose sole method is found in a merciless succession of the same crops, generally grain or root-crops, with shallow cultivation and little or no fertilization. This shiftless husbandry, however, is undermining its own existence, and promises shortly to relieve the country of its presence. As the soil finally refuses to answer this destructive system with a bare subsistence, the farmer sells out in order to "go west" and diffuse the blessings of his exhaustive system over a quarter-section of frontier virgin soil. In Delaware County, rye and buckwheat have been repeated through a whole decade. In Cattaraugus, five to seven successive crops of oats are raised year after year. In Chemung County, tobacco crops are raised, the leaf, it is said, growing finer and cleaner every year. On the cheaper highlands of the same county hay and oats have been raised till they would not bring a half crop. Onondaga County seems to have measureably got rid of this system, which left large areas covered with Canada thistle. In the valley of the Mohawk, crops of broom-corn have been raised for thirty years without any apparent exhaustion of the soil.

In New Jersey this class of farmers do not render themselves so prominent in our reports as in most of the other States. In a majority of the counties, reported rotation is pursued with greater or less regularity. The following summary by our correspondent in Cumberland County will give an idea of the extent and character of rotation in the State:

Our farmers are of two classes, grain farmers and truckers; the former class practice a five years' rotation; they first plow up their sward-land usually in the early spring for corn, applying some kind of fertilizer usually in the hill; after the hen-roost manure is exhausted, either phosphate or bone dust is used; the second year the same ground is either replanted in corn, or oats, or potatoes are put in, with a dressing of barn-yard manure, or for oats a light dressing of some commercial manure, and in the fall of the same year, wheat is usually sown in with another coat of manure, sowing down to grass and allowing it to lay two or three years, the grasses sown being usually clover or timothy. The truckers do not usually practice any routine, often putting in the same ground, year after year, and dressing heavily with manure.

The exceptions to rotation seem to be mostly the result of some great industry, such as market-gardening or dairying. Cultivation and fertilization are generally thorough. In Burlington County a considerable area in cranberry-marsh indicates the necessity of a constant succession in that peculiar product.

In Pennsylvania but three counties are reported as entirely ignoring rotation. In a large portion of the State the system is general if not universal. A routine known as the "Pennsylvania rotation" is especially noted in Cambria and other counties, which ranges through five years. Corn is planted on sod broken in the spring and thoroughly manured. Then follow oats, wheat, and two crops of grass, the wheat being treated with super-phosphates. The other systems reported are mostly modifications of the above. Our correspondent in Lehigh County develops

a transition phase of agriculture in Pennsylvania resulting from the extension of mining and manufacturing enterprise:

At present there is no particular system practiced by the farmers here. Especially in what is termed the Lehigh Valley farmers have suffered considerably owing to the iron business having forced wages to a point beyond which the farmer could not engage. A revolution in the system of farming has commenced which should have begun earlier. Owing to the short crop of wheat and rye for a number of years, low prices and high wages, farmers were almost ruined. The great number of hands required in the iron business made it apparent that more meat and vegetables should be produced, and which are also more remunerative. Our farming community is mainly composed of the old German element, who are slowly leaving an old-beaten path for a new untrodden one. A number of our farmers are confining their attention principally to corn, grass, and vegetable raising.

Market-gardening, grazing, and dairying largely interfere with rotation in different localities, but the class of shiftless, exhaustive farmers, though still too numerous, grows small by degrees.

In Maryland rotation is very general, though in some districts there is a decided tendency to excessive grain and grass cropping. The most general order is to begin with corn or potatoes on broken sod, and follow with one or two crops of small grain, the last being seeded with grass. Sometimes the last-named crop is continued till it runs out, and the rotation again begins. In Washington County, wheat, on good soils, is raised many years upon the same soil freely fertilized with bone, phosphates, &c. In Somerset, corn has been raised thirty years with little culture. The tendency to repeated croppings is found mostly among small farmers and tenants. Market-gardening and dairying are extensively pursued in some localities.

Of the South Atlantic Coast States, Virginia shows a considerable tendency to crop rotation. In several counties a regular system, formerly existing, was broken up by the disasters of the late civil war and the change in the labor system. About one-fourth of the counties report a somewhat regular routine, embracing: 1. corn; 2. wheat or oats; 3. clover; another fourth ignore it entirely, while in the remainder partial and dubious efforts are maintained. As a specimen of the first class the following, from Williamsburgh County, may be cited:

It is practiced by three-fourths of the farmers in this county. What is known as the three-field system is being adopted universally, almost, for the old four-field system. The second year after cultivation, with or without clover, a dark mold is formed in the soil, which will last only one year; and if the farmer fails to turn it in in the spring of the third year, he will almost certainly fail in a corn crop. In the following summer it is supposed the "acids arise," and then comes the sage-sod, which soon renders the soil very poor.

Our Nelson correspondent says:

One of the best farmers here has his farm divided into three fields, and works one every year, but turns under once always in three years a good crop of clover; this farm is improving rapidly in productiveness and the owner says he is making more money than before the war. Some prefer (on the five-shift system) corn, wheat, or oats, followed by three crops of clover, other produce in the order of wheat, corn, oats, and two crops of clover. For the first of these crops the farmers aim to turn the clover sod early in the fall and finish by what we call "fallowing for corn" by Christmas. Where clover sod is prepared for wheat a two or three horse turning-plow is used in July, August, and sometimes continued into September, when dry summers prevent early plowing. Where tobacco is cultivated it is almost invariably followed by wheat.

Henrico presents an example of the non-rotating counties:

The only pretense at rotation consists of corn first, then wheat or oats, followed by clover, which is left, usually, but a single year. If near a city, the clover is cut and sold in the market; at a greater distance from a market it is frequently turned under after having been pastured off or mown once. But little attention is paid to the land in any case. I have seen fields so wet when plowed for spring-oats that the water would accumulate in the furrows after the plowman.

The repetition of crops in long succession, without manure and with superficial culture, finds numerous illustrations in different parts of the State. In Princess Anne, corn has been grown for fifty years with an occasional crop of weeds as a rest. Near towns and cities this treatment is rendered more tolerable by the amount of stable-manure accessible; but in many places it has told severely upon the soil, as is thus stated by our correspondent in Cumberland County:

The best land is selected for tobacco and corn, following the tobacco with wheat, and some may sow a few clover seed to afford a scanty pasturage for their poor stock the next year. Others seed their corn-land year after year in oats, until they bring it to broom-straw, then go to their wood land for a fresh tobacco crop.

In North Carolina the majority of the counties reported indicate an entire absence of crop rotation. In other counties a partial and varying routine is noticed in rather dubious terms. The following is a specimen of the more systematic and intelligent but isolated efforts at rotation:

About half my cultivated land is not adapted for the growing of cotton; this half I reserve for corn and oats, not planting the whole of it to either crop, but a part to rest every year, and always following the rest with corn, and the corn with oats. I have divided the other half into two equal parts, one of which I plant to cotton, manuring with home-made compost or commercial fertilizer; on the other part I put a few acres in sweet potatoes, and remainder of the field in pease. The potatoes and pease are fed off on the land to hogs and beef cattle. The next year this part goes to cotton and the other to potatoes and pease.

Thus, in the cotton land the course is two years; 1. potatoes and pease; 2. cotton; in the remaining portion the course is three years: 1. corn; 2. oats; 3. rest.

The repetition of crops is pursued to an astonishing degree. In Catawba and Caldwell Counties, for instance, low lands have been planted in corn from seventy-five to one hundred years; in Pasquotank, fifty years; in many others from ten to forty years. In river-bottoms, where the soil is annually renewed and fertilized by overflow, this process seems capable of repetition *ad infinitum*. In some counties every agricultural interest is subordinated to cotton, which is grown year after year till the land refuses to yield a paying crop. In some instances cotton-fields are liberally manured, but in others very little effort is made to supply plant-food. Our correspondent in Stanly says:

The absence of market facilities, and the lack of cheap and improved implements of husbandry, prevent the poorer class of farmers from following a systematic rotation; and if the plan should be adopted by the wealthier class, it necessitates the farming out of their lands to colored laborers; who, though very industrious and well-behaved, cannot be brought to a perfected system in anything. Exhaustive cropping on the old plan is therefore the rule, and any attempt at a systematic course the exception.

In South Carolina, Georgia, Arkansas, and in all the Gulf States, systematic rotation is very little thought of. Our correspondent in Columbia County, Georgia, thus reflects a leading phase of popular opinion in the South:

Although the benefits following rotation are acknowledged by the majority of farmers in this section, yet it is practiced by comparatively few. Many think the extensive use of "commercial fertilizers" does away with the necessity for this annual change of crops, and the fertilizer used is selected with direct reference to the crop to be produced, and the crop is thus fed and grows by this outside help, *thus preventing too great a drain upon the soil itself*. This creates an idea in the minds of those who practice this system that the outlay of money is a salve to the soils, and to this extent not only preserves but increases its fertility; others maintain that this extensive and general use of stimulating manures, while they may and do increase the production, do it at the expense and the ultimate deterioration of the soil, in other words they "kill the land," and the old, worn-out lands of Virginia are cited in vindication of this theory.

Cotton, corn, small grain, sugar-cane, sweet-potatoes, and a few other crops are grown according to prospective local or general demand,

and often in exhausting succession upon the same land. Soil preparation and fertilization are often entirely ignored, and when practiced at all are very imperfectly attended to except in the case of cotton. Many counties report the repetition of this crop through twenty or twenty-five years, while in one—Wilcox, Alabama—lands have been kept fifty years in cotton without intermission. Occasionally this crop is alternated with corn, small grain, or grass. In some districts the soil appears to bear this strain with but little indications of exhaustion. In other cases, however, the normal results of this ruinous system are painfully apparent. In Louisiana new-comers occasionally attempt to introduce improvements, but are unable to resist the influence of universal example, and ultimately fall into the old routine. Some idea of this routine may be gathered from our report from Terrebonne Parish:

For the first year the land is put in corn and cane, it being too rich to put in solid cane; usually two rows of corn and two rows of cane are planted alternately; the corn ripens and is bent down before the cane gets very high, this admits the sun to the cane. The following year the two rows of corn are planted in cane, and all is thus kept in cane for two years more; then corn follows, and when it gets its last plowing a row of pease is sown on each side of the row, which covers the surface of the ground with a dense mass of vines; these vines are then turned under with four-mule plows, having revolving pea-vine cutters attached in front like a colter. Generally one year in corn and pease is sufficient to enable us to plant cane again. If the land is old, corn and pease are continued until the desired fertility is reached. The most approved plan is to keep old land two years in cane, *i. e.*, one year of plant and one of stubble, and then follow one year with corn and pease; this course steadily improves the land.

Among the special industries of this section of the Union, rice-culture is especially mentioned in Georgetown district, South Carolina. Two-thirds of the rice-lands have lain waste since the war.

In Tennessee, West Virginia, and Kentucky; though in the majority of the counties reported there is an entire absence of systematic rotation, yet in other counties it is practiced with considerable regularity and with excellent results. The rotation generally embraces corn, small grain, and grass, tobacco being sometimes interpolated in the series. In Robertson County, Tennessee, it is found that wheat follows clover more advantageously than corn. A three years' course commonly adopted is: first, corn; second, wheat; third, clover. This is changed to five years, as practiced by others: first, corn; second, wheat or other grain; third, clover three years. Others still practice a course of four years, with two years in clover.

In Monroe County, West Virginia:

Twenty per cent. of our people are tobacco-growers; they grow on new land generally two crops of tobacco, followed by wheat, which is considered a sure crop after tobacco; about one-third seed-clover on the wheat in the spring, and retain as permanent pasture, or turn over in two or three years for corn, and follow with wheat on corn-stubble.

In Oldham County, Kentucky:

About one-third practice rotation, the remainder plant corn in new timber-land so long as it will yield twenty bushels to the acre, then sow oats and repeat corn, and finally become so poor themselves they are compelled to sell the land and "go west." Another class, when the land has become impoverished, try clover for two years, then put in corn and follow by wheat or oats; this is what we term "four years' rotation;" about two-thirds follow this plan. Others, after corn, sow orchard-grass seed, one bushel to the acre, and one bushel of clover-seed to the eighth of an acre, with wheat or oats for two years, at the end of which time the clover has pretty well died out; the four following years cut for seed, which is one of the principal crops in this immediate neighborhood; this is termed the "eight-year system," *i. e.*, two grain crops, two years in pasture, and four years' cutting.

According to the practice of the best farmers in Fayette County, Kentucky:

Clover-sod is turned under in the fall or early spring, and two crops of hemp or

corn are made, then grain is sown in the fall or spring, clover (mixed with timothy or blue-grass where permanent pasture is desired) is sown upon the small grain, if designated for grain crops subsequently. After two full years' growth of clover, it is again plowed and small grain sown in the fall. Those who are yearly tenants have no system of rotation, but get all they can out of the land by cropping.

Injurious repetitions of corn and tobacco crops on bottom-lands and of small grain or hemp upon uplands are frequently mentioned.

Of the States north of the Ohio River, considerable portions of Michigan and Wisconsin have been settled too lately for the organization of any system of rotation or, indeed, for the introduction of any but ordinary methods of cultivation. Even here, however, the rudiments of a system of rotation are already discernible. In many of the older counties there is a more or less capricious shifting of crops, which some term rotation. In other counties however, regular systems are found extending through three to five years, and embracing corn, potatoes, small grain, and grass. In these States the temptation to repetition is mostly in small grain and potatoes; a temptation too frequently yielded to. Rotation is the general rule in about half the counties reporting from Ohio, while it is considerably diffused through many others. In the great river-bottoms fertilized by annual overflow the tendency to repeated crops is inveterate. Scioto bottoms, for-instance, after fifty years of repeated crops of corn, still yield 60 to 100 bushels per acre. The large proportion of this class of lands in the State greatly restricts the scope of rotation. Large areas are also devoted to grass-crops, stock-raising, and dairying, in which rotation is not practiced.

In Logan County—

About three-fifths of the cultivated land is under a varied system of five or six years' rotation. A three-year-old clover-lay is turned under in the spring and planted in corn; the corn-stubs are dragged down in the fall, and wheat drilled in the wheat-land being seeded to clover in the following February or March, making a five-year course of corn, winter wheat, succeeded by three years of clover; otherwise varied in a six-years' course by two crops of corn or wheat—the small amounts of oats, beans, potatoes, and buckwheat we grow making but an exceptional variation to the specified course.

In Morrow County, rotation is practiced—

By about one-half the farmers. Meadow or pasture land is plowed up in the spring, sometimes in the fall; when plowed in the latter season a more thorough harrowing is required. The most successful ones find it pays best to pulverize thoroughly previous to putting in the crop; the first and sometimes the second crop is corn, then follows oats, and next wheat. In preparing for oats, as soon as the top of the ground is dry enough in the spring, sow the oats on the corn-stubble, and put on a rolling-cutter or wheel-harrow. The crop is generally more certain than to wait until the ground is dry enough to plow; as soon as the oats are off give the land a deep plowing, from seven to nine inches, put on barn-yard manure on the poorest spots, from ten to twenty cords to the acre, and on the whole field, if there is manure; during September harrow the manure in with the soil, usually drilling is the most remunerative. This is the course usually followed with soil. Subsoiling and underdressing is but little practiced, although it pays to do it.

Rotation is the rule in about one third of the counties of Indiana; in another third it is the exception, while in the remainder it is unknown. Non-rotating farmers are found mostly in bottom-lands, but in too many cases the rich uplands have been ruined by their destructive practice. In Dearborn and Park Counties forty successive corn-crops have been gathered. The rotation series generally embraces corn or potatoes, small grain, and grass, though wheat frequently is sown upon fresh-broken sod. German farmers in Owen County practice a three-fold system of duplicate crops—two of corn, two of wheat, and two of clover. Of clover, the first crop is generally cut twice, once for hay and once for seed. The second crop is pastured till July, and then permitted to run to seed, after which it is turned under by deep plowing.

In Illinois nearly two-thirds of the counties reported ignore rotation *in toto*, while of the remainder at least half pay but little attention to it. Corn has been repeated for fifty years on alluvial bottoms, and wheat on uplands for twenty years. An annual decline of yield has been a significant but too often unheeded commentary upon this ruinous practice. Our correspondent in Cass County remarks:

Corn being our main crop, the only rotation is to either oats or wheat, the former producing a sure crop, the latter a very uncertain one. On land that has been under cultivation for a number of years, we raise two crops of corn and one of oats, thus making a rotation of three years; but one-half our best farmers keep about 50 per cent. of their land in pasture for seven years; it is then prepared for corn: a sod-plow drawn by two horses, followed by a subsoil plow drawn by two more, breaking the ground to a depth of six inches, completely covering up the sod; the ground is next well harrowed, check-rowed and planted. Ground thus prepared will yield from fifty to eighty bushels per acre, and will produce good crops for four years; then a crop of oats prepares it for two more crops of corn. The course thus described consists of seven years, four of corn, one of oats, and followed by two of corn again; then it is ready to be sown in grass again, which is done by putting in timothy and clover; about February and 1st March, broadcast, on land where corn grew the previous year.

In the States west of the Mississippi the same general facts are observed. Rotation is almost unknown in three-fourths of the reported counties of Minnesota, in seven-eighths of those of Iowa, and in two-thirds of those of Missouri, while in Kansas and Nebraska it is but little more than nominal. Destructive repetitions of particular crops are too frequent to particularize. In Bremer County, Iowa—

The great majority of farmers break up the prairie sod in June if possible; it is sown to wheat the following spring, generally with a broadcast seeder, and then well harrowed; some few cross-plow in the fall, the same season it is broken; others plow the same direction it was broken and turn the furrows back. Wheat is usually grown upon this land two seasons in succession, and sometimes longer. Stubble-land of wheat and oats is almost invariably plowed in the fall. The land is afterward cultivated alternately with corn and wheat or oats. Occasionally a piece is seeded with timothy or clover, or both, and mown for hay, or pastured for a year or two, and sometimes longer, then plowed up and sown with wheat.

One of our correspondents in Missouri writes:

The farmers of this section mainly belong to that well-known class yclept "old fogies," whose ancestors, hearing of this goodly land about half a century ago, came hither from Kentucky and Western Tennessee, literally following the leadings of Divine Providence, upon whom they relied with unfaltering faith for support, doing as little as possible themselves to interfere with the Divine arrangements.

Our correspondent in Nemaha County, Kansas, says:

I came here in 1860 from New York, where I had farmed land worth $100 per acre, following a systematic rotation with good results. I commenced nearly the same course on our new prairie soil, excepting the manure and clover. I alternated corn and small grain, but found it would not answer; corn will not do well after small grain. I then adopted the plan of corn for two seasons, then summer-fallow; then spring grain, followed by winter grain; then summer-fallow again, and follow with corn.

In three or four counties of Utah there are rotations of corn, small grain, and pease, but the order is not very uniform. In no other portions of the Territories have any approximations toward rotation been reported.

On the Pacific coast rotation is but little known. In California, where the great staple wheat crop has been grown in destructive succession, it is becoming common in some localities to very the crop every few years, either with a volunteer crop of wheat-hay, or by seeding in barley, oats, or corn. The increasing growth of weeds and the constant multiplication of foul seed is compelling some alternation of crops. In some counties, Humboldt for example, new land is planted from two to five years in potatoes, followed by several years of wheat, and finally by grass crops, which are sometimes continued till they run

out. The best wheat-lands, which have astonished the world by their enormous production, are visibly declining in fertility.

In Oregon, only two counties report even an approximate system of rotation. The abundance of land owned by individual farmers enables them to rest the soil, yet there are instances of long succession of crops. In Linn County a thirteenth wheat crop (Australian spring) averaged 26¼ bushels per acre. The cultivation in this case was thorough, embracing two plowings, the first 10 or 12 inches and the second 6 inches. Very few of these repeated crops, however, have received any such cultivation as is seen in the declining fertility of some of the finest wheat-lands.

SOIL IMPROVEMENT.

In many counties of New England efforts for the permanent improvement of the soil are intelligent and energetic. In others, however, but little is done except with reference to immediate results. Many farmers are more or less dependent on manufacturing, lumbering, fishing, or some other outside calling for a living, and consequently give but minor attention to the cultivation of the soil. Others own but a few acres, and are destitute of the capital necessary to make improvements or even to arrest the deterioration of their lands. Hence from some quarters come complaints of declining fertility. But the necessity and the practicability of retaining and even of enhancing the natural fertility of the soil have lately awakened more general attention and have led to some systematic and well directed enterprise in this direction.

Barn-yard manure is universally used. The accumulations of the stables and vaults of the numerous cities and manufacturing towns, after supplying the market gardeners and truck-farmers in their immediate neighborhood, are in some cases transported hundreds of miles into the interior by river and rail. This long transportation, however, renders the material too costly for extensive employment in general farming. On the farms it is sometimes saved with extreme care, while in many cases it is to a great extent wasted. Among the best farmers, in all this region, barns have been constructed with especial reference to the saving of both solid and liquid excrements of farm animals. These are composted with muck, sawdust or any other material that will absorb ammonia. The droppings of the hog-pen and of the hen-roost are, by many farmers, carefully gathered and added to the barn-yard heap. Night-soil is used near the cities. Sometimes these fertilizers are plowed under for the corn crop; sometimes they are applied as a top-dressing, especially upon grass crops. Near the coast large quantities of lobster-refuse, menhaden, and other fish manures are used. On some soils they produce valuable results, but upon others their application has not been so satisfactory. Sea-weed, salt-marsh hay, and other vegetable *débris* are eagerly sought after. Commercial fertilizers are extensively used in a few localities, but in others they have lost favor. Nova Scotia plaster is a great favorite in Chittenden County, Vermont. In several localities in Massachusetts, Rhode Island, and Connecticut, guano and superphosphates are extensively employed. The tobacco-growers of Hartford, Connecticut, especially favor concentrated fertilizers and claim very remunerative results from their use. "Fancy farmers, gardners, and fruit-growers, with city business," also use them extensively, but it is intimated that in many cases the expense overruns the profits. Green-soiling and clovering are but little used. Our correspondent in Carroll County, New Hampshire, censures the plowing under of green crops upon the following grounds:

1st. One year's rent of the land is lost. 2d. The cost of seed and labor would procure and apply compost-manure enough to insure a better crop the present season, and benefit the land for a longer time than any crop raised on the ground without manure, and plowed in, will insure the next season. It is a fact that compost-manures will get their reward one year sooner than a turned-under green crop. For an illustration: Farmer D's land is naturally good, but it has run out by poor management; he adopts the green-crop fertilizing principle and expends, in seed, labor, &c., $200, and puts his whole crop under the soil, and the income is *nil:* thus the farm stands Dr. to cash and interest, $230. Now, Farmer K expends on his land $200, in compost and labor, and the result is, he obtains a crop worth $230, and the following spring his account will stand thus: Farm, Dr. to cash and interest, $230. Farm, Cr. by crops, $230.

Considerable underdraining and subsoiling are reported in some localities. In York County, Maine, underdraining is confined mostly to clay lands, and is not gaining favor. Farmers here contend that it is not necessary in hill lands. The genial effects of improved cultivation are especially remarkable in many counties. In some localities a feeling is gaining ground in favor of more systematic rotation. In Kent County, Rhode Island, it appears to be demonstrated, "whether from upwards of two hundred years of successive croppings or original lack of organic properties in the soil," "that no amount of manuring will keep the soil in profitable tilth beyond the seventh year."

In the Middle States farming is more an exclusive pursuit than in New England, and is pursued in many counties with intelligent reference to soil-improvement. This, however, is not always observable in those counties in which rotation of crops is most generally observed. Fertilization as well as cultivation are too often directed to immediate and superficial results, regardless of subsequent impoverishment of the soil. Domestic fertilizers are used by all farmers, and in general are economically treated. The towns and cities supply a very large fund for the supply of market-gardeners and-truck farmers, but the chief resource of the general farmer is in the accumulations of his own farm. Stock-raising and sheep-husbandry add very considerably to the amount of organic matter returned to the soil for plant-food. In New Jersey extensive deposits of marl are found in accessible positions, and are freely used as fertilizers. Lime, also, is a favorite in counties where it is readily obtainable, especially in those regions of Pennsylvania which are underlaid by extensive coal and lime-stone strata. Fish manure, sea-weed, and other marine organic matter are largely used near the coast, and night-soil, well composted, is in demand among market-gardeners. Commercial fertilizers are growing in favor in some counties, while in others their value is seriously questioned. Clovering and green-soiling are, in many counties, the mainstay of recuperative farming. The green crops, heavily top-dressed with either barn-yard manure or plaster, are often inverted in full and luxuriant growth; even buckwheat is treated in this way, though the practice is sometimes sharply criticised by intelligent farmers. The high prices of hay tempt the farmer either to mow or pasture his grass crops too closely, thus limiting the benefit that might be derived from this process. Lawrence County, Pennsylvania, especially relies on clover as a fertilizer and raises unusual quantities of clover-seed for market. Underdraining, subsoiling, and improved tillage are cited as effective agencies in soil-improvement. The results of systematic efforts in this direction are especially seen in Monmouth County, New Jersey, the soil of which, though remarkably-poor forty-four years ago, has become very rich and productive. The same might be said of many other counties in the Middle States, but marked examples of a contrary character are not wanting.

Of the South Atlantic coast States, Maryland and Virginia practice an agriculture more assimilated to northern than southern systems. In

the former, which measurably escaped the devastations of the late civil war, farming appears of late to be prosecuted with greater energy and success, and to have embraced within its scope a more earnest effort for the permanent improvement of the soil. Special efforts in this direction are reported in Frederick, Caroline, and Howard Counties. Barn-yard manure is the special reliance in such movements, but lime is of very frequent application. Wicomico County uses about 100,000 bushels per annum; Frederick spreads 40 or 50 bushels of lime per acre. In Queen Anne it is applied in moderate quantities to clover before plowing for corn, and then 300 pounds of superphosphates per acre are placed on corn-ground to be plowed for wheat. This application, it is said, will double the wheat crop and treble or quadruple the subsequent clover crop, besides leaving the ground in better condition for subsequent tillage, while the use of only 100 pounds of superphosphates would do a positive injury by causing the crop to run to straw. Commercial fertilizers, however, are generally less used. Clovering is considerably practiced in the western counties.

In Virginia the majority of our reports show little or no effort for soil-improvement. The waste of the late war and the change in the labor system are alleged as the reasons of this backwardness. This, however, is not universally the case. In Cumberland County, "within the last two years considerable advance has been made in the improvement of lands owing to the increased circulation of agricultural works and the dissemination of better varieties of seed." Intelligent farmers in Rockingham are making strenuous efforts, saving manure, composting, clovering, &c. In Williamsburgh County—

> Great efforts were made by farmers, followed by many and disastrous failures, in their attempts to improve their lands with the modern quack fertilizers; finally they have determined to use nothing but lime and the farm products, and which we consider the only salvation of the farming interests of this county.

Experiments in clovering have been quite unsuccessful lately on account of the extreme drought. Commercial fertilizers have greatly disappointed expectations, but lime has produced very favorable results. In North Carolina some isolated efforts are made by intelligent men to improve their lands, but generally the idea itself is entertained by few. As an excuse for inaction it is alleged in some quarters that crops are seldom housed till after Christmas, and that the weather after that period is too cold for out-door labor. This from the latitude of North Carolina will sound oddly to northern and western farmers, who find time for extensive and important farm labors during each winter. In South Carolina the phosphates, of which large deposits have been found in that State, are extensively applied, but not always with intelligent reference to their specific effects. These applications are mostly made for immediate results and not for permanent improvement, which appears to be but little regarded. Georgia makes an extensive use of commercial fertilizers upon cotton. Gwinnett County consumed about 2,000 tons during 1872. In Franklin County they have been applied at rates varying from 300 to 1,000 pounds per acre. In a few counties, such as Gordon, clover is raised in increasing quantities, and in some cases has been plowed under in full growth. Of the lands within ten miles of railroads in this county about 25 per cent. are in clover. The difficulties of recuperative farming are thus stated by a correspondent in Talbot County:

> Nothing is regarded by farmers so profitable as cotton. The lands generally produce such small crops of corn that it will not pay the expense of the laborers we are obliged to employ, owing to the fact of their having but little regard for loss of time, even

when they are interested in the crop; moreover, an acre of land that will produce 5 bushels of corn will produce 125 pounds of lint-cotton, which of course is much more profitable.

The following, from Gadsden County, Florida, presents the case of that State in a nutshell:

The efforts in this county are rare and feeble. A few are impressed with the importance of the subject, and are making some efforts in the proper direction, but the great majority of planters have ignored it entirely. Under the present system the land is either rented to the laborer annually for a specified sum per acre, or he receives as compensation for his services a share of the crop produced; in either case his interest ceases with the housing of the crop.

In Alabama, Mississippi, and Louisiana, efforts at soil-improvement are but little more than nominal. In some cases farmers working their own lands haul manure, but neither the large planter nor the tenant-cultivator thinks of such an extra exertion. A few experiments in subsoiling and deep plowing are disparagingly spoken of. In Texas, in some localities, soil-improvement is considered a proper subject of amusement. In all of these States, where any effort is made to utilize barn-yard manures, the purpose of saving labor is everywhere prominent. Occasionally a truck-patch or garden is manured by "cow-penning," or confining farm animals within an inclosure, in order that the soil may receive the benefit of their droppings without the labor of hauling. Cotton-seed and commercial fertilizers are used largely for stimulating the growth of cotton. In Arkansas there is manifest a greater interest in this subject, and efforts, though partial and feeble, show an appreciable difference from the other cotton States. Very considerable efforts are made by a portion of the farmers of Tennessee to improve their soils. Clovering is the main stay in a part of the State. Our correspondent in Knox County gives the following:

But few fertilizers are used, and not much barn-yard manure. Farmers rely chiefly on clover and plaster, and the result is astonishing to northern farmers. After our lands have become so exhausted that five bushels of wheat to the acre cannot be counted on with certainty, by the sowing of clover, or clover and timothy, and using one bushel of plaster per acre for three years consecutively, the land will yield from fifteen to twenty bushels of wheat with almost an absolute certainty; and during the three years in clover will yield from one and a half to two tons of hay per acre; and if again sown in clover and timothy, and allowed to remain two years, will be restored to its original productiveness. During the past five years the hay and clover-seed will net the farmer more clear profit than any other crop he can grow, aside from the improvement of the land.

Green-soiling is but little practiced. Grasshoppers have deterred the raising of fertilizing crops in some cases. Some counties report great improvements in the last five years, but the general indications are that public attention, as yet, is but little awakened to the subject.

In West Virginia and Kentucky general efforts at soil-improvement appear to be wanting, yet there is, in many counties, a growing attention to the subject. Clovering has not been so successful during the past two seasons, on account of drought, but it is largely used in some counties, though often too closely cut or grazed to be of signal value. Live stock, and especially sheep, are increasing in numbers, enhancing the productiveness of the soil. Manuring is practiced with greater care, but still it is too much neglected or confined to "poor spots." In Boyle County, Kentucky, four-fifths of this material is wasted. In Pocahontas County, West Virginia, there is "very little effort toward soil-improvements; barn-yard manure is not economized, while limestone and lumber lie moldering side by side." Our correspondent in Daviess County, Kentucky, says:

Within the last few years the people are beginning to awake to the value of fertilizers. Much waste land has been reclaimed by their influence, such as red clover, red-

top or herd grass, or barn-yard manure. Clovering is practiced by almost every farmer to a considerable extent, but not half enough.

Our reports from the States north of the Ohio present a remarkably variable character. In Ohio the use of barn-yard manure is generally among upland farmers, though there are conspicuous examples of its neglect even among them. The large area in bottom-lands is fertilized to a very moderate extent, and often not at all. Clovering is a leading idea in some counties; in Logan 40 per cent. of the farmers use plaster to stimulate its growth. Ditch and tile draining and subsoiling are largely practiced, and stock-raising, especially sheep-husbandry, is increasing. The following from Richland County represents the methods of a large portion of the State:

Of late deep plowing is more practiced than formerly, so deep as to find a new farm which lay under the old one, which latter is quite as valuable, if not of greater value, than the old one. This is assisted with all the manure on the farm. This course is the general one; some purchase large quantities in villages and cities. Green-soiling is practiced to some extent. At present prices, it is unprofitable to buy "commercial fertilizers" for the production of our common cereals. At the prices asked for such fertilizers, the expenditure is greater than the income. Those who formerly practiced this method have returned to the barn-yard again. For corn, we think a compost from the pigeon and hen roost, with plaster, is attended with quite as good results as are "commercial fertilizers." This is usually applied in the hill, sometimes upon and sometimes under the seed; some have placed it upon the hill after planting, but with precarious results. This compost is needed for the early nourishment of the tender plant upon its first appearance above the ground, and for the first three or four weeks afterward; it is especially needed at that time, whatever may be its effect afterward, which is no doubt beneficial; but for the maturation of the plant we depend upon the decomposed manure and seed turned under. Clovering is very generally practiced with us; our rolling and hilly lands are welladapted to its growth or culture. First crop for hay, and the aftermath for seed generally, but sometimes for hay also; then, again, others prefer the aftermath for pasturage, leaving the refuse upon the soil, which is not exhaustive to it, while both the others certainly are.

Our correspondent in Kalamazoo County, Michigan, says:

Gypsum is the only commercial fertilizer used, and that not uniformly or generally by the mass of farmers. Of late years barn-yard manure is appreciated enough, so that if farmers have time after everything else is done they will draw it into the field. But a few years since the accumulation of manure around the barn was considered a great nuisance, and many barns have been moved to new ground to get away from the evil. "Clovering," so called, is practiced to a large extent in the growing of wheat. The land is left fallow until about the middle of June, when the clover and the other vegetation is turned under by a plow especially adapted to this purpose. It is afterward worked thoroughly with a two-horse cultivator previous to seeding, which is done with a seeder and cultivator combined. Where this plan is followed results are uniformly satisfactory. Without it, I incline to the opinion that the wheat crop of this State would be fearfully diminished. One fact has been demonstrated that is important to know, and that is, *that the increase of yield per acre is almost in exact ratio to the amount of cultivation.*

In many portions of Michigan very great efforts are made for the permanent improvement of the soil.

In about one-fourth of the counties of Indiana, as reported, recuperative enterprise is very backward, if it has any existence at all. In about one-half there are indications of an awakening to the necessity of soil-improvement; while in the remaining fourth the movement is promising and growing. In some counties only one-half or one-fourth of the farmers haul manure, very often merely to get it out of their way. More care is now manifest in saving and applying it. Clovering and green-soiling are reported in some quarters, as are also subsoiling and ditching. Commercial fertilizers are of limited use. Improved methods of culture have also exercised a beneficial influence.

Our correspondent in Crawford County, Illinois, says:

As our lands are reduced by cultivation and so much increased in price that they cannot buy a new field cheaper than improve an old one, our farmers are paying much more attention to fertilizers.

The above remarks indicate a satisfactory reason for the long continuance of the exhaustive process of culture upon the rich lands of the Northwest. Economic considerations of immediate weight and bearing are now pleading for a recuperative system, and it is scarcely possible that such should plead in vain. The use of barn-yard manure has become quite general. The burning of straw and other residual organic matter is less frequent than formerly. Clovering, green-soiling, trench-plowing, subsoiling, and other improvements have been extensively introduced.

The rich soils of the new counties of Wisconsin have, as yet, given but little uneasiness to farmers in regard to an ultimate but inevitable exhaustion, but in the older portions of the State this question has assumed a practical aspect. Some intelligent and successful efforts have been made to maintain the productiveness of lands by a careful saving of domestic fertilizers, by stock-feeding, and by improved processes of culture. Many aggravated cases of a contrary character, however, are reported.

West of the Mississippi the farming of a very large number of counties is thus graphically described by our correspondent in Linn County, Iowa:

> No efforts are made toward the improvement of the soil, but on the contrary the most strenuous efforts to impoverish it by getting from it all that can be got and giving nothing in return. Barn-yard manure, if it can so be called, only is used.

Systematic soil-improvement is merely nominal in from one-half to three-fourths of the counties reported, yet there are isolated cases of the most advanced and intelligent effort. Between these extremes there is a wide range of effort, which on the whole gives promise of improvement. The exhaustion of some of the richest lands in the older portions of these States has challenged attention to a growing necessity for recuperative culture, and hence domestic fertilizers are coming into more general use. Commercial fertilizers are occasionally tried, but with no remarkable results. Clovering is increasing, while subsoiling and other improved processes are becoming more frequent. Our correspondence abounds in severe strictures upon the general status of farming in these States. In the Territories farming is too new and unsettled, and the virgin soil too recently brought under cultivation to secure any attention to this matter.

On the Pacific coast summer-fallowing and irrigation are the leading methods of soil recuperation. The dry summers render it difficult to rot manure sufficiently to render it serviceable in fertilization. What little is made is in many cases absorbed by the garden or truck-patch, leaving but little for field crops. In Placer County, California, it is estimated that summer-fallowing increases the subsequent wheat-yield at least 20 per cent. In Linn County, Oregon, grain is cut with "headers" which leave most of the straw on the ground. This is plowed under and forms a very good fertilizer. The large area of land owned by individual farmers admits of frequent and continued resting from cropping.

THE PROFITABLE AND RESTORATIVE IN OUR AGRICULTURE.

The questions in our March circular, numbered four, five and six, were designed to elicit facts showing the comparative prevalence of "restorative" farming, (any system by which the farm annually becomes more productive by the return of an equivalent for that which

is sold from it,) and the comparative degrees of preference given in different localities to the different branches of husbandry. Necessarily the digest must appear somewhat repetitious, and trite and commonplace views must be presented, the object being to exhibit the opinions and reasonings of the farmers themselves from local stand-points, and in the light of ther own experience and immediate observation. Their statements, with calculations of cost and profit, at given prices of products and rate of consumption, afford data for much valuable analysis and deduction.

It is gratifying to notice that wholesome views prevail on these subjects, on the part of our correspondents, and that the theory of the mass of farmers is far better than their practice, which is gradually improving. Yet there are multitudes, in many counties a majority, who do not appear to see clearly the distinction between capital and dividends, between the farm and the legitimate income from it. There are many who so "carry on" a farm as to carry off its substance with each crop, who delude themselves with the idea that they are prospering because they include as income a fraction of their invested principal; others, who yearly increase the productive capacity of their farms, appear to enjoy small profits, yet the result in a single generation is wealth, while the inheritance of their neighbors, who deplete the soil, is poverty. It is of the utmost importance that all farmers should see that the relations of successful farming to home-consumption, to the amount of capital and labor required, to transportation and market, and to increasing productiveness of the soil, are considerations which none can afford to disregard.

No mistake is more common than that of overestimating the profits of farm products sold, from overlooking the fact that a part of the value of the farm itself is sold with them. If one owns a farm, the intrinsic value of which (on the basis of its productive capacity) is $2,000, and so conducts his farming operations that at the end of the year that value is diminished $50, he may commit the error of counting in with his legitimate profits $100 more than he could had he managed it so as to increase its value $50. If this difference is overlooked, the farmer who pursues the former method may, in the outset, make a fine show of profits over him who pursues the latter; but in the course of years the difference between an annual accretion of capital, and a yearly diminution of it, will be very likely to make all the difference between success and ruin.

THE RELATION OF SUCCESSFUL FARMING TO HOME CONSUMPTION.

Shall the farmer or planter produce the animals needed in carrying on his farm, the field products for their support, and the meat, bread, butter, cheese, vegetables, and fruit for his own table? Or is it on the whole more profitable for him to concentrate his efforts upon the production of one or two specialties, and from the proceeds of the same sold in market pay others for raising the farm products needed in carrying on his own farm and bringing them to him? In the New England and Middle States, where mixed husbandry is almost universal, this is hardly a practical question; but in some of the southern and western States it is one in respect to which opposite opinions and practices prevail. So far as opinions are backed by substantial evidence and practices by facts and figures, the returns of our correspondents largely favor the rule of home-production for home-consumption. There are, doubtless, some instances in which circumstances of soil, climate, and

market justify a farmer in relying mainly upon other farmers for the farm products needed in carrying on his own farm; but it seems probable that the great majority of those who do so continue a practice to which they have become habituated, not so much from any positive evidence that it is more profitable, as from the fact that they have never tried the opposite policy long enough to fairly test its legitimate results. One correspondent, after stating that the principal product of the country is cotton, reports that the producers "consume one-half the proceeds of that for corn, flour, and bacon, and the other half for mules, horses, and goods." Others—

"All consume all they raise except cotton, and fully one-half do not raise as much as they consume; the few who do are the most prosperous farmers, and about the only ones who keep out of debt." "Nearly all consume the proceeds of their cotton crop in the shape of meat, corn, hay, &c., bought abroad." "All agree that while it may not be profitable to raise other field products than cotton for market, it *is* profitable to make enough for home-consumption." "In the cotton district, those who use fertilizers and plant grain enough for home-consumption are making money most rapidly." "Experience has proved that only those farmers are making any clear profit who make their own supplies and have their cotton-money clear." "Our farmers consume all except cotton, and that is consumed by three-fourths of them in the way of procuring supplies of bacon and corn." "The great majority see no profit in any crop but cotton, which is yet considered 'king;' but the very few progressive men here consider diversified husbandry best for us—to raise home-supplies, good cotton crops on small areas by high manuring and good tillage, sheep on a gradually-increasing scale, yearly puting more land into clover, grass," &c. "It is easy to demonstrate that the 'all-cotton' system practiced by most of our farmers is ruinous, and that the diversified system is the only profitable one."

Some of the reasons why home-production for home-consumption as a permanent policy should be more profitable than the opposite are obvious. The farmer who raises the articles needed for home-consumption saves the cost of transportation and marketing, and guards against the risk of low prices for his products and high rates for supplies to be purchased with them, and he is enabled to adopt a system of rotation which shall be restorative rather than exhaustive; to utilize unmarketable products, (as coarse fodder, etc.,) and to economize labor more fully than in a single pursuit.

PROFITS AS AFFECTED BY CAPITAL, LABOR, AND QUICK RETURNS.

Some branches of farming combine the advantages of being carried on profitably with small capital and comparatively little labor, while bringing cash returns in a short period. All these advantages pertain to sheep-husbandry, the first and last named to market-gardening and fruit-raising, and the last especially to dairying. Where the farmer's capital is very small, or labor is scarce and high, or his necessities demand speedy cash returns for his farm products, his success must depend very much upon a judicious adaptation of his farming pursuits to these circumstances. It is true that in all farming, in estimating net profits, the amount of capital and labor employed, and the time of waiting for returns, must be taken into the account; but the farmer with surplus capital can invest in stock, improvements, labor, &c., with reference to distant returns, and wait for them, and take advantage of transportation and market, as the one with small means cannot. It therefore often happens that in the same locality the branch of farming most remunerative for farmers with capital is not the one most profitable for those of small means. Our correspondents in different locations furnish illustrations of the necessity of one's adjusting his farming operations to the exigencies of means and labor, to secure success.

Coos, N. H.—Wool, meat, and dairy products are considered more profitable than raising grain, on account of the difficulty and expense of securing and paying labor.

Rutland, Vt.—Dairying most profitable, because of the ready sale of all its products, and more manure is made.

Wyoming, N. Y.—Farm labor is so high that farmers cannot afford to hire men to do their work, and women can help better in the dairy than in the field.

Seneca, N. Y.—Sheep are again attracting considerable attention because of the high price of labor and low price of grain.

Carroll, Md.—Dairying most profitable, because there is less expense compared with returns.

Fairfax, Va.—A cabbage crop on five acres has been known to pay the ordinary expenses of a large family and leave a balance of $500.

Mathews, Va.—All branches unprofitable, owing to want of capital and scarcity and uncertainty of labor. Raising sheep might be made profitable were it not for dogs.

Rappahannock, Va.—Growing cattle most profitable, because it requires fewer laborers and less expense to conduct it.

Middlesex, Va.—Stock-raising, particularly sheep. The reason of this is the great want of farm labor.

Kankakee, Ill.—The profit of feeding grain to stock, on an average, at present prices, adds 50 per cent. But few are in a condition to feed stock, and consequently it is not the general practice.

Marion, Ill.—Feeding is most profitable, but not practiced to any considerable extent for the want of capital.

Saint Clair, Ill.—On the bottom-lands opposite Saint Louis, market-gardening is now and always will be a very remunerative employment. And so small an amount of land and capital is required that the poorest of the poor can engage in it.

Carroll, Mo.—By farmers of small means, on small farms, tobacco is regarded as most profitable. Farmers with large capital prefer stock-breeding.

PROFITS AS AFFECTED BY TRANSPORTATION AND MARKET.

In determining whether this or that branch of farming is the more profitable, the facility for getting the product to market, and the relative cost of transportation to its value in market, are essential to be considered. Some vegetable, fruit, and berry products will not admit of transportation to a distant market in an unmanufactured state, on account of their speedy decay or depreciation; others are so bulky in proportion to their market-value that they will barely pay for transportation. Of course, to produce such beyond what is needed for home-consumption must be a losing business, unless by some process of concentration, as drying, canning, &c., the proportion of value to bulk can be largely increased. If the cost of transportation be half a cent per pound, and the value of corn and wool in market be respectively one cent and forty cents per pound, then, while the cost of transporting corn is one-half its value in market, the cost of transporting wool is only one-eightieth of its value. In other words, while it would cost the producer one-half the corn he raised to get the other half to market, it would only cost him one-eightieth of the wool he raised to get the other seventy-nine eightieths to market; or $12.50 for freight on $1,000 in wool, instead of $500 for freight on $1,000 in corn. This will serve to illustrate the general principle that on all farm products for market, other things being equal, the net profits will be greater in proportion as their values are concentrated. Where the market is distant this consideration is one on which a correct decision must often hinge in determining what farm products will be most profitable. Recent low prices for field products, high freights on railroads, and other exigencies, are compelling agriculturists in all sections of the country to give increased attention to this subject. This is sufficiently indicated by the replies of our county correspondents to the question: "What branch of farming is at present deemed most profitable, and why?"

COMPARATIVE PROFIT OF SELLING AND FEEDING HAY AND GRAIN.

This branch of the general subject is so interwoven with the preceding that they are often necessarily connected in the statements and statistics with which our correspondents have abundantly illustrated both. In the following extracts, selected from a large mass, a few refer exclusively to one of these related branches, but so large a proportion have a bearing, either direct or indirect, on both, that no attempt is made at discriminating.

MAINE.—*Cumberland:* If there is any profit at all derived from farming in this county, it consists in converting our hay into mutton, wool, and dairy products, thereby enabling the farmer to keep up the fertility of the soil. *York:* I kept a full memorandum of all my farm operations from 1851 to 1861; I found the expense for labor $200 per annum. Increase of grass products from $450 to $750. Hay from thirty-five to fifty tons. I neither sold hay nor bought fertilizers. Average price of hay at barn, $10.

NEW HAMPSHIRE.—*Coos:* We can realize one-fourth more to sell our hay and grain than to feed it to stock; but we are obliged to feed in order to keep up the productiveness of our lands.

NEW YORK.—*Dutchess:* Selling hay, grain, and straw yields full 25 per cent. more than feeding, but this impoverishes the soil. *Schenectady:* He who feeds has as much money as he who sells, and the manure besides. *Cattaraugus:* All who have tried both practices, a gree that feeding hay and grain on the farm is most profitable. *Chemung:* We know t hat for a brief term of years there is more profit in selling, but we cannot continue to sell our raw products without producing exhaustion of the soil. The dairyman allows two tons of hay for the winter-keeping of one cow. One cow in November is worth $25, and two tons of hay, $20, make the cost of the cow in sping $65, while good cows may be bought in May for $50 or less; but no stock, no manure. *Columbia:* The two following illustrations are all that I am able to give of comparative profit of selling and feeding hay and grain:

Dr.		Cr.	
To 20 tons hay	$320 00	Manure	$75 00
Grain	300 00	Sheep sold	1,500 00
200 sheep	500 00		
		Total	1,575 00
Total cost	1,120 00		1,120 00
		Profit	455 00

The above were a lot of wethers, from which no wool was taken. Another flock principally ewes, kept one year, made the following exhibit:

D		Cr.	
To 450 sheep	$1,350 00	Manure	$150 00
To 40 tons of hay	600 00	Wool	850 00
To grain	250 00	Sale of sheep	2,250 00
To pasture	40 00	Sheep and lambs on hand	250 00
Total	2,240 00	Total	3,500 00
			2,240 00
		Profit	1,260 00

PENNSYLVANIA.—*Lancaster:* Those that consume all their products on the farm make the most manure, improve their farms, and are considered the best farmers. *Warren:* It is well understood here that if a farmer intends to keep his farm it does not pay to sell any hay, straw, or grain, except wheat, unless he gets more than the usual market-price.

VIRGINIA.—*Grayson:* Feeding pays 50 per cent. more than selling field products. *Pittsylvania:* I noticed last spring hay for sale here at $2.50 per hundred pounds, which was raised near the Hudson River, in New York. Farmers would do better to raise less tobacco and more hay, corn, and fodder, and so improve the soil. Hay brings as much as in New York City, though land only costs one-twentieth to one-fifth of what it does in New York State. *Floyd:* It pays at least 50 per cent. better to feed

hay and grain on the farm than to sell at our usual market-prices. *Washington:* A ton of hay worth $20 in market is worth $25 fed on the farm, and feeding grain pays better than hay. *James City:* Corn at 75 cents per bushel, and fodder at $1 per hundred-weight, fed to sheep, is worth twice the cost price; fed to cows and calves is worth respectively $1 per bushel and $1.50 per hundred-weight. *Orange:* Leaving out the cost of hauling to depot, 100 bushels of corn nets me in market $54; 2,500 pounds of hay, $25. These products fed to four bullocks, in sixty days will add $20 to the value of each. The manure from these bullocks, if rightly managed, may be safely estimated at $20 over and above the labor required to take care of them. Fed to good sheep for mutton, the money profit would be greater. *Shenandoah:* We consider that we can afford to take ten cents less per bushel for corn, and $3 to $5 less per ton for hay, fed on the land. For example, in the fall we take a high-conditioned bullock, weighing, say 1,000 pounds, and worth $50; we feed him thirty bushels of corn, at 50 cents; labor in feeding, $2; at the end of that time, say three months, the animal has cost $67, and gained 150 pounds; 1,150 pounds, at six cents, gross, amounts to $69, or $2 over and above the cost with the manurial value added to the land. In some winters, like the present, the gain is not so much; but ordinarily the gain and advance price are greater. *Powhatan:* A few feed cattle for market and are the most thrifty farmers we have.

North Carolina.—*Hertford:* Much more profitable to sell grain than to feed to stock. Corn commands 80 cents per bushel; bacon can be bought for 10 cents, and it requires 10 bushels of corn to make 100 pounds of pork.

A stock-hog for fattening would not be likely to cost as much per pound, net, as those pounds would sell for after it was fattened. The 10 bushels of corn would cost $8; the 100 pounds of pork made by it would be worth $10, besides adding to the value of the number of pounds of pork in the hog before the fattening, and besides the manure, which should at least pay for feeding.

Georgia.—*Towns:* Nearly every farmer that owns land consumes his field products, and buys all the corn from those who do not own, the latter being fully one-half the population. Some buy all the young mules and young cattle they are able to in the fall, feed out their own grasses, corn, fodder &c., and buy all they can of those not able to own stock. The growth of the young stock is considered to double the value of what is fed to them. *Gilmore:* One of the most successful of our farmers will not sell hay or rough feed to be taken off his place; says he would rather feed his neighbor's cattle on his place for nothing than to sell his hay to him to be carried off.

Texas.—*Collin:* There is usually a profit of 100 per cent. in feeding horses, mules, and beef cattle over the usual selling price of grain and hay. *Travis:* By feeding hogs and beeves for market the farmer gains 50 per cent. over selling field products. *Dallas:* Corn is fed to beef cattle, and in this way farmers realize at least $1 per bushel for their corn. Corn-fed cattle will usually bring from $75 to $80 each; deduct from this $20, the first cost, and it pays very well. Corn fed to hogs pays well, as pork is ready sale at 7 cents per pound at this time.

Arkansas.—*Marion:* It pays 25 per cent. on the investment to feed hay to stock. *Montgomery:* When corn is only 50 cents per bushel it is more profitable to feed it to hogs than to sell. *Benton:* When corn sells from 20 to 30 cents per bushel, and hay at less than $10 per ton, we think it more profitable to feed to hogs and stock.

Tennessee.—*Rhea:* It is more profitable to feed mules and cattle, as they bring a fair price and are got to market at less expense. *Williamson:* Three barrels of corn fed to a $10 hog will make that hog worth $30. A ton of hay fed to a cow worth $15 will make her bring, in the spring when she has a calf, from $30 to $50. It is still more profitable to feed mules and sheep through the winter. Corn carried to market will not average over $1.50 per barrel, and hay not over $15 per ton, after expenses are paid. I shall never sell another barrel of field produce from my place if I can avoid it. *Roane:* I have no doubt that to consume all the hay and corn on the farm by feeding to good improved stock rather than to sell, pays better by at least 50 per cent. over and above the increased amount of manure made on the farm. *Cannon:* Profit in feeding rather than selling at market price 25 per cent. *Blount:* Farmers find that it is at least 10 per cent. more profitable to feed their corn to hogs, mules, and beef cattle than to ship it. *Giles:* Those who sell everything off the farm soon exhaust it—the exhaustion being only a question of time. Those who feed the hay and grain to stock, and sell the stock, enrich the farm all the while, and make $2 clear where the former class make $1. *Union:* Feeding field products has the preference over selling. It enables us to take our grain to market in small bulk—in beef, pork, and mutton; and enriches the farm. *Fentress:* Every man of sense knows that feeding out all products at home, and carefully saving and using the manure, is the only sure way to enduring profit in farming. *Greene:* Feeding grain and hay on the farm pays fully 25 per cent. better than selling the same. *Jackson:* Profit of feeding, over selling, corn to hogs, 10½ per

cent.; for bacon, 20 per cent.; hay and grain to good young mules, 20 per cent. *Knox:* It is more profitable to feed cattle and mules of good stock and realize 50 cents per bushel for corn and 50 cents per hundred for hay than to sell for double the amount at the railroad-depots, as the permanent improvement of the land compensates for the difference.

WEST VIRGINIA.—*Upshur:* At least 20 per cent. profit is gained by feeding on the farm. *Brook:* Sheep were bought last fall at $4 per head; kept till March, and sold at $7 per head. Cost of keeping, 50 cents each per month. Gain, $1 per head, and the manure of the farm, which is counted sufficient gain in itself. *Raleigh:* The difference, old experienced farmers think, between selling and feeding hay and grain, is about 50 per cent. in favor of feeding on the farm. *Boone:* Grain and hay fed to cattle and mules is worth double to the farmer to what it is to sell. *Braxton:* Corn sold off the farm is worth 50 cents per bushel; fed on the farm, $1. Hay sold off the farm is worth $10 per ton; fed on the farm, $20. *Berkeley:* My experience convinces me that if the grain is ground and cooked it will produce 100 per cent. more flesh on an animal than if fed in the grain. By cooking, I think it would pay to feed the grain on the farm. It is attended by some trouble, but the labor of hauling corn to market is greater. One load of corn, 30 bushels, (2,100 pounds,) is worth $18, while a load of pork (2,100 pounds) brings $126; thus it would take seven loads of corn to equal one load of pork.

KENTUCKY.—*Henry:* A large majority feed their crops, and consider the practice much more remunerative than selling. *Hardin:* Hay is worth $18 per ton at the railroad, corn 35 cents per bushel, and wheat $1.65. We think we can get at least $1.50 more for hay by feeding it to mules, besides the manure, than by baling and shipping it. We can make $4.50 of pork out of 10 bushels of corn, when, if we sold the corn, we should get but $3.50. *Mercer:* Our farmers think that they can realize more money by feeding their grain and hay to stock, and selling the stock, than in any other way. *Shelby:* Ninety-nine per cent. consume the larger proportion of their main crops in feeding mules, horses, cattle, sheep, and hogs, considering corn and hay worth about 50 per cent. more for that purpose than to sell. *Boyle:* Difference between selling and feeding hay and grain is at least 50 per cent. in favor of feeding.

OHIO.—*Clinton:* By experiments made by myself I find there is about 16 per cent. saved by feeding my corn and hay to hogs and cattle, with corn at 50 cents and hay at $8 per ton, and hogs at 4½ cents per pound, gross, and cattle at 4 cents, gross. *Medina:* Selling would yield the greatest present profit, and feeding the greatest ultimate profit. *Hancock:* Not only can a farmer realize more for grain and hay by feeding to stock, but can raise larger crops by returning to the soil what has been taken from it. *Trumbull:* The profit of feeding grain on the land, taking into consideration the benefit to the land, is 20 per cent. *Licking:* It is a settled fact with us here that there is more profit in feeding hay and grain on the farm than in selling them. *Geauga:* Considered by all our best farmers bad policy to sell any part of their hay or grain. *Coshocton:* From five different experiments made the past season from corn fed to hogs bought and sold at 4 cents per pound, an average of 51 cents per bushel was realized for the corn and labor of feeding. *Portage:* Corn fed into pork will pay 62½ cents per bushel when pork sells at 5 cents per pound; hay fed to cows pays $15 per ton. *Morrow:* By taking several years together the profits are greater to feed the products on the farm than to sell.

MICHIGAN.—*Livingston:* Comparative profit of feeding by experiment: A hog, valued at $4, fed for 90 days 22½ bushels, worth $5.62, sells at $11; leaving a profit, allowing offal to offset trouble, of $1.38. A steer three years old, valued at $40, is fed five months two tons of hay, worth $25, besides stabling and straw, and sells for $50; loss $15. *Calhoun:* Hay, straw, roots, oats, corn, &c., are usually fed on the farm; they are converted into wool, beef, pork, mutton, butter, and stock. A successful feeder of mutton-sheep says that his hay and grain is worth to him twice the ordinary selling-price to feed to wethers, and asserts that with good wethers at $3 to $3.50 per head in November, he can buy corn at 25 cents per bushel of ears, and hay at $8 or $10 per ton, and double his money by feeding it to such sheep.

INDIANA.—*Newton:* The profits on feeding hay and grain will be 30 per cent. more than can be realized from the sale of the same. *Park:* I think that 25 per cent. is gained by feeding our hay, corn, and oats to stock. *Gibson:* When the products are fed to cattle or hogs it pays two ways; it is easier to dispose of the products, and the farm is improving by the manure left on the land. Corn at 30 cents per bushel and pork at $3.25 per hundred are about equal. *Shelby:* Corn is worth about 25 cents per bushel to feed to hogs; 12 bushels will make 100 pounds of pork, which is worth fully $4, making it bring 33⅓ cents. *Decatur:* Last year my neighbor had 30 pigs. He fed them eight months and sold them for $183, having fed 220 bushels of corn, beside the run and clover all summer, giving 83 cents per bushel for corn; clover, pasture, labor, &c., thrown in. *Switzerland:* The practice of selling all the hay and straw prevails to such an extent as to lead to the wearing out the land. The profit of feeding over selling is as 3 to 2 in favor of feeding. *Marshall:* The feeding of corn, oats, hay, and fodder is at least 20 per cent. better than selling. *Lawrence:* Our hay and grain bring us 25 per

cent. more by feeding to stock. *Johnson:* When hogs and cattle are 4 cents per pound it is estimated that corn is worth 35 cents per bushel on the farm, which is better than selling at 40 cents to deliver at the market. *Vanderburgh:* New corn is usually worth 30 cents per bushel. With pork worth 4 cents per pound, net, it is estimated that corn is worth from 45 to 50 cents per bushel to feed to hogs. It pays better to sell hay. *Wayne:* All thrifty farmers in this county sell comparatively little of the crops they raise, except wheat. It is estimated that grain and hay fed on the farm is worth 25 per cent. more than to sell and haul off, to say nothing of the manure.

ILLINOIS.—*Cass:* Corn is worth 20 cents at depot. Cost of shelling and hauling, 5 cents; leaving the value at the crib 15 cents per bushel. To feed to cattle at home it realizes us 25 cents. Feeding cattle, in the fall, are worth 4 cents per pound; fat cattle, in the spring, 5 cents. A steer, weighing 1,000 pounds, at 4 cents, costs $40; fed 180 days, one-half bushel of corn per day, will gain 250 pounds; weighs in spring 1,250 pounds, at 5 cents, equals $62.50; gain, $22.50 for the 90 bushels of corn. The advantages of feeding on the farm are regarded as an equivalent for the additional labor and the interest on the money invested in the stock. *Hancock:* How impoverished the land is getting to be by the practice of cropping year after year and returning nothing, is painfully manifest. *Morgan:* On the uplands it is easier to drive than to haul products, and as a rule farmers get a better price for corn in stock than sold in bulk. Corn now, shelled, sacked, and delivered, is worth only 25 cents; hogs are worth 4 cents per pound, gross, and this gives at least 35 cents for corn. Fed to cattle it would not realize more than 25 cents, but the hauling is saved, and the offal more than pays for feeding, and all is left on the premises to enrich the land. *Grundy:* At the present relative prices 40 per cent. could be gained by feeding. *Clark:* My hogs this year at $3.50 per hundred, gross, paid 40 cents per bushel for corn. I sold 12 shoats to a neighbor, who carefully measured their feed, and they paid him 47½ cents for his corn. They were Chester Whites; none but the best improved breeds will pay that price for corn. At the same time corn was but 25 cents per bushel. I have for years found that corn fed to sheep, by a careful feeder, will pay 50 cents per bushel when wool is 40 cents per pound, and mutton, without the fleece, $2.50 per cental. A cattle-feeder stated to me that he generally makes corn fed to good cattle pay. *Fulton:* But little grain of any kind shipped from the county. Twenty or thirty years ago the shipments were large; it was no uncommon thing to see twenty to fifty teams in a row, hauling to the Illinois River, to ship to Saint Louis and other points; but of late years there has not been enough shipped to give employment to one grain-buyer, while any station on the different railroads can support from two to ten stock-buyers. Hogs are the principal product; according to the census, our county leads the State in the number of swine raised. The average price during the season has been about $3.50; extremes, $3 to $4.50. Horses and cattle are receiving considerable attention. Quite a number of thorough-breds, of both classes, are owned in the county. Corn for feeding in good demand at the cribs at 25 to 30 cents per bushel. Judging from the financial condition of counties and individuals that depend on grain for market, as compared with those depending on stock, I think the profits are largely in favor of stock-raising. *Carroll:* Fifty per cent. of the field products of the county is consumed in it. Those farmers who consume their grain and hay on the farm in the long run are most successful. The more we concentrate our products before sending to market, the less the expense of marketing in proportion to their value, and the less exhausting to the farm. *De Witt:* I fed the product of 40 acres of corn, this season, to hogs. I could get only 18 cents per bushel for the corn at the railroad; by feeding to hogs on the farm I realized 28 cents, besides saving the expense of hauling, equal to 2 cents. *De Kalb:* It is far more profitable to feed than to sell; indeed, this is fast becoming the rule. *Knox:* Since October, corn has averaged 25 cents per bushel; live hogs $3.65 per cwt. At these figures we get 37 cents per bushel for corn fed, while, if the whole crop of corn were thrown on the market, it would not bring more than 12½ to 15 cents per bushel. Feeding neat cattle pays better this year than hogs. *Rock Island:* As a general rule farmers save, by feeding, the entire expense of taking grain and hay to market, and add largely to the fertility of their land. *Crawford:* From 35 to 50 per cent. more profit from feeding rather than selling grain. *Kankakee:* Corn is selling for 21 cents, pork 4⅛ cents, cattle, live weight, on the average, 5 cents—a difference of nearly 100 per cent. in favor of the feeders. *Ford:* The profit of feeding double that of selling the grain. *Winnebago:* Corn is selling here at 25 to 26 cents per bushel; hogs, at present the lowest of any live stock, at $3.60 to $4 per cwt. Under ordinary circumstances, 10 bushels of corn will make 100 pounds of pork, but will make much more if care is taken in selecting breeds and attending to comfort of the hogs. Wool is worth 40 cents per pound, unwashed, and good mutton-sheep 4½ to 6½ cents, live weight. Corn is worth three times its present market-price to feed sheep. Have fed from four hundred to six hundred every winter for many years, and know whereof I speak. *Tazewell:* The profits of feeding over selling would average one-fourth. *Bureau:* All say corn, &c., fed pays 50 to 100 per cent. more than market price. Feed-

ers are buying corn and paying 5 cents more per bushel than grain-merchants, and while they have compelled merchants to go up from 15 to 24 cents, in some parts of the county cattle and hog feeders are paying 30 cents, which is good proof that they get paid. *Schuyler:* Our best farmers consume all their corn and hay, and some, more than they produce. From my own experience, I am thoroughly convinced that the profit is in favor of feeding. I have for many years kept an account of corn fed to hogs—nothing more—and invariably found that I did better by feeding. *Marshall:* Nearly all consume a large portion by feeding to cattle and hogs. Corn, the staple crop, is worth 20 cents per bushel; fat hogs 3¼ to 3¾ cents per pound. Feeding corn to hogs and selling at the above price is considered by our farmers as equivalent to selling the corn at 30 to 35 cents per bushel. *Iroquois:* Corn is now worth 20 cents per bushel; hay $8 per ton. The feeder gets as much for his hay as to sell, and may safely count on 40 cents per bushel for his corn. *Henderson:* Last season corn was bought, 20 cents per bushel, and fed to hogs. It was estimated that the hogs made the corn pay 26 cents.

Wisconsin.—*Livingston:* While one farmer by the manufacture of his corn into pork and beef will assuredly grow rich, another, who simply sells his corn at the market-price, is always poor. *Jefferson:* Profit of feeding hay and coarse grain 25 per cent. above that of selling. *Vernon:* There is a growing disposition to do so, on account of the improved pecuniary condition of some, which enables them to increase their stock of cattle and swine. Corn is selling for 35 cents per bushel; 10 bushels will make 100 pounds of pork, worth $3.75, which gives the farmer 37½ cents for his corn, besides the manure. A bullock weighing 1,000 pounds costs $30. Feed him 30 bushels of corn, $9, and 1 ton of hay, $6, and he will weigh 1,200 pounds, and sell for 5 cents per pound, live weight, $60; profit $15, besides the manure. *Washington:* About two-thirds consume all the corn, oats, and hay. They are better off than those selling the same, and are more successful in raising cereals.

Minnesota.—*Isanti:* It takes about 2 tons of hay and 10 bushels of corn-meal to make in prime condition an ox from grass in the fall; value, $50; 2 tons of hay, $10; 10 bushels of corn, $5; sold, say February 1, for $80; leaving a profit of $15 per head over the market price for hay and grain. The manure well pays for the labor.

Iowa.—*Appanoose:* Timothy hay or timothy and clover mixed is worth from $5 to $6 per ton; two tons will winter a steer without grain; his growth will be worth about $12, and his manure goes to the land. I cultivate 450 acres, keep about 20 head of horses and colts, from 100 to 150 of cattle, according to the crop; feed everything I raise, and my farm is increasing in fertility. Profits are moderate, but we never fail to get a fair return on either cattle, sheep, or hogs, and generally make a small profit on all. *Cass:* The profit of feeding over selling corn is fully 100 per cent. For instance, corn now is selling at 15 cents per bushel, and many of the farmers must haul it from ten to eighteen miles to market. Hogs sell at $3 to $3.25 gross, which makes corn equal to 30 cents per bushel. *Sidney:* Corn fed to cattle and hogs on the farm is worth 25 cents per bushel; to ship it, worth, at the railroad station, 15 cents per bushel. *Shelby:* Corn, at the station, is worth 15 cents per bushel; fed to hogs it pays 35 cents, to beeves 45 cents. *Ida:* The profit of feeding is 100 per cent. over that of selling. *Cherokee:* Corn is worth 15 to 20 cents per bushel; pork about $3.50, net, per hundred. As the market for corn is limited to home-consumption, it is mostly fed to stock or used for fuel, being cheaper than coal. Hay is worth $2.50 to $3 per ton. The increase of stock in value is about 100 per cent. per annum. *Logan:* Corn is 15 cents per bushel; by feeding to hogs, at 3 cents, gross, the corn will yield from 40 to 65 cents, and even more, according to thriftiness of hogs fed. If judiciously fed to young cattle, horses, or mules, it yields a much greater profit. *Jackson:* Our farmers never sell grain, but feed all to their stock; say they find that more profitable by 15 to 20 per cent. *Des Moines:* Accurate figures cannot be given because of the uncertainty of hogs. One cannot feed cattle here with a margin over, unless he follows them with hogs; and when the cholera takes off his hogs his margin is gone. Other things being equal, one saves something more than the hauling by feeding his hay and grain at home. *Jefferson:* The usual practice is to thrash the wheat, oats, rye, barley, &c.; stack the straw, gather the corn in the field, and then turn in the stock. Upon the standing stalks, the aftermath of the meadows, and the straw-stacks cattle are expected to winter. The grain, except what is needed for home-use and feeding of horses and hogs, is usually sold. Very little corn has gone out of the county the last two years. It is mostly consumed by feeders, who can afford to pay more than the shippers. *Hardin:* Twenty-five bushels of corn will raise from pighood 300 pounds, gross, of market pork, which is now worth $9, which equals 36 cents per bushel for corn which it cost 15 cents to raise, or a profit of 140 per cent. by feeding. *Dallas:* Corn at the present price here, 17 cents per bushel, would make pork cost about 2 cents per pound, live weight. Hogs are worth 3 to 4 cents per pound, making corn fed to them bring from 25 to 35 cents per bushel. *Marion:* Corn, since last fall, has sold for 15 to 20 cents per bushel. At the present price of fat hogs here, 25 to 30 cents will be realized for the corn fed to them. It is usually as profitable to feed corn to fattening cattle as to

hogs; fed to sheep at present prices it pays better than to either hogs or cattle. Hay, corn, and oats are worth much more to feed to good young mules than to sell in market. *Monona:* The most careful estimates would indicate fully 75 per cent. in favor of feeding on the farm. *Jasper:* Corn at 10 cents per bushel in the crib, when it cost 15 to 20 to put it there, can scarcely be called remunerative, while pork at $3 to $3.50 per cwt. pays 25 to 30 cents per bushel for corn fed. The profits depend mainly on the care bestowed from the time the pigs are dropped; breed also has very much to do with the profits. The fact is established that our improved breeds pay a much greater profit for the feed and care bestowed than does the third-row-of-potato hog. *Greene:* Corn brings 10 cents per bushel. One bushel fed to cattle, with hogs to follow, will make 4 pounds of beef and 4 of pork; beef worth 4 cents and pork 3½; amounting to 30 cents, or a profit of 20 cents per bushel for feeding. Fed to hogs alone, 15 bushels, worth $1.50, will make 200 pounds of pork, gross, worth $7, being a profit of $5.50 on 15 bushels of corn. *Muscatine:* All fully believe that feeding is more profitable than selling, as it concentrates our produce and consequently diminishes the cost of transportation. *Pottawattamie:* Our successful farmers feed the larger portion of their corn to their cattle and hogs. With corn at 15 to 18 cents per bushel, good beeves worth 4½ to 5 cents, gross, and pork 3 to 4 cents, gross, there is not the least doubt that it is better to feed corn at home; fed judiciously to good breeds of cattle and hogs it is worth to the farmer at his crib 25 to 30 cents per bushel, a saving of 100 per cent. if cartage and manure are taken into account. *Calhoun:* When corn and oats, hauled quite a distance to market, sell at 10 to 30 cents per bushel, and hay at $4 to $5 per ton, any person can see that it will pay better to feed and sell the fat hogs and cattle, which generally bring a good price and can be marketed to drovers on the farm. *Buchanan:* When the stock is good, the feeding judicious, and the cattle-sheds comfortable, the profit of feeding is about double that of selling hay and grain. *Louisa:* The general opinion of our best-informed farmers is, that when corn is worth 20 cents per bushel, hogs can be profitably raised at $2 per 100 pounds, live weight. This year corn sold at 20 cents, and hogs were worth $3 per cwt., consequently there was a profit of 50 per cent. in feeding over selling the corn. *Marshall:* Corn sells in our market at 16 cents per bushel; fed to hogs, including breeding sows, which become thin when suckling, it will yield 8 pounds of pork, gross, per bushel; fed to fattening hogs it will produce 10 pounds per bushel, worth here 30 cents; fed to fattening cattle followed by hogs it will, at present rates, yield about 33 cents per bushel. *Fayette:* Except wheat, nearly all is fed out on the farm, from the fact that very little of it will bear transportation. Hay, corn, and oats, properly fed, pay very nearly 50 per cent. better than selling off the farm, taking present prices as a basis. *Poweshiek:* Last year corn brought 25 cents per bushel in the market; fed to cattle and hogs it brought over 50 cents per bushel.

MISSOURI.—*De Kalb:* Corn selling at 20 cents per bushel, when fed raw to hogs or cattle brings 30 to 35 cents. *Livingston:* With wild hay at $3.50 and tame hay at $5 per ton, and corn at 20 cents per bushel, and oats at 15 cents to 20 cents per bushel, farmers make from 50 to 100 per cent. on the money invested in stock. *Boone:* There is quite a margin in favor of feeding hay and grain to stock, on account of the exorbitant prices charged for transportation. *Bates:* The system generally adopted is to feed the corn in the ear to cattle, and let hogs follow them; in this way we realize about 30 cents per bushel for corn, while to sell it and haul twelve miles to market we should get but 15 cents per bushel. *Carroll:* In feeding corn to hogs, under ordinary circumstances, a bushel will make 10 pounds of pork, gross; corn is now worth 21 cents per bushel, shelled and delivered; shelling and delivery equals the cost of feeding; the 10 pounds of pork are worth 40 cents, so that the profit of feeding is 100 per cent. *Nodaway:* The average cost of producing a bushel of corn is 17 cents. The average home-market value, one year with another, is 22 cents, or a net profit of 29 per cent.; fed to hogs for market it will bring a net profit of 35 per cent.; to sheep, 75 per cent.; to beef-cattle, 60 per cent.; to raising mules, 30 per cent.; to horses for market a loss of 10 per cent.; to dairy stock, a net profit of 100 per cent. *Saint Clair:* Between selling and feeding there is at least 20 per cent. in favor of the latter. *Cedar:* It is more profitable to feed farm-products. To illustrate: on 2 acres 100 bushels of corn, at 30 cents per bushel, $30; 3 tons of hay, at $6 per ton, $18; total, $48. The cost of 10 mules at weaning, $40 each, is $400; worth ensuing spring $55, or $550. There is left a balance of $102 profit in feeding over selling the crops on two acres. *Dalle:* When corn is 20 cents a bushel the farmer gets 40 cents by feeding to stock. *Greene:* It will not pay to ship corn or oats to Saint Louis except in the shape of hogs and cattle. *Clay:* We think that $4 gross per cwt. for hogs is better than 30 cents for corn, and that $85 per cwt. for cattle is also better when the feeder has hogs to follow them. *Shelby:* The raiser who sells his grain and grass can make a living, while the feeder makes clear cash to spare. *Caldwell:* Corn, when judiciously fed to stock and hogs, brings 50 per cent. more than to sell. It is worth 15 cents per bushel when hauled on an average six miles to market, and well fed at home it is worth 25 cents, and in many cases 30 cents per bushel.

KANSAS.—*Wilson:* Corn is worth 15 cents per bushel; ten bushels fed to hogs will make 100 pounds of pork, which, $3.50 per cwt., (the price of pork,) gives 35 cents per bushel, a gain of 20 cents. *Labette:* Corn now is a dull sale at 20 cents per bushel, but when we feed corn in connection with wild grass it will pay about 55 cents per bushel, and when fed to hogs about 40 cents per bushel. *Riley:* Some think that 50 or 60 per cent. profit is realized by feeding, but it is doubtful; the only case noted where careful account was kept was a sow and eight pigs, quite young, bought about January 1, 1872, killed January 1, 1873; average net weight, 285 pounds; total net, 2,565 pounds; sold at 3½ cents, $89.77. They were fed 397 bushels corn, at 20 cents, $75.40; original cost of hogs, $12; leaving a profit of $2.37. *Sumner:* All agree that selling corn at present prices, 25 cents per bushel, brings but little profit, and that 40 cents per bushel can be realized by feeding to hogs. *Morris:* Market price for corn, 20 cents per bushel; fed to stock it is worth from 40 to 60 cents per bushel.

NEBRASKA.—*Johnson:* Corn sold to dealers brings from 12½ to 15 cents delivered; fed to cattle brings 40 cents. Prairie-hay sells for $3 to $5 per ton; fed to cattle will realize $8 to $10 per ton. *Otoe:* Two-thirds of the farmers consume most of the corn-crop on the farm, owing to the low price of corn, with an estimated gain of about 50 per cent. over and above selling the grain. *Nemaha:* Feeders have realized 40 cents per bushel for corn, when corn was bought for 25 cents per bushel; 35 cents per bushel has been realized for corn fed to hogs, which were sold at $3 per hundred, gross, when the corn sold in the market at 15 cents per bushel.

CALIFORNIA.—*Amador:* Beef is worth $8 per cwt.; the hay and grain at present prices required to make a hundred-weight is worth $10 to $12. Hogs are worth 6 cents live weight; the best breeds of hogs require 6 pounds of grain to make one of pork; wheat, barley, and corn are now worth 1¾ to 1½ cents per pound. *Mendocino:* In the immediate vicinity of Ukiah, the best market in the county, corn, wheat, barley, and hay can be sold to advantage, but in any other locality in the county there is a large percentage in favor of feeding to live stock, which after being fattened can carry itself to market. *Sonoma:* The chief product, being wheat, is shipped. The farmer who can sell his corn for 1 cent per pound, the lowest price known, realizes more than he would to feed it to hogs. A hog will readily eat 15 pounds of corn per day, from which he will gain 2½ pounds, worth 5 cents per pound; then if watering, feeding, and other work is counted, it is evident that the margin is in favor of selling the corn.

COLORADO TERRITORY.—*Huerfano:* No grain is fed to stock. The products of the farm can all be marketed, for the reasons that our herds of sheep, cattle, and horses subsist on the grass the whole year. *Larimer:* None of the produce of the farm is fed except to work stock and a few dairy cows; beef fattens on the native grasses of the plains, and pork can be shipped too cheaply for us to feed grain, which is worth about 2 cents per pound. *El Paso:* The nutritious grasses of our prairies are fully equal to the corn-fields of Iowa and Illinois. We slaughter as fine beef off the range as can be made by feeding corn for three to five months.

UTAH TERRITORY.—*Morgan:* The prevailing judgment is in favor of feeding rather than selling products. *Box Elder:* All agree that it is more profitable to consume on the farm. *Tooele:* Not one farmer in the county would think of feeding grain to any animal but his working teams and the two or three he fattens for family use.

PROFITS AS AFFECTED BY RISKS.

The class of farmers who place their main reliance for cash returns upon farm products, which are sure and for which there is a steady and sure market, in which case the profits, as a rule, are moderate, are, in the long run, more successful than the class whose main hope rests upon extravagant profits (which are *sometimes* realized) from products especially liable to failure of crop, or great fluctuations in price. To find the path to steady and sure gains from market products—gains which make one a little "better off" each year than he was the preceding year—is to find the proper mean between the extremes of great profits and great risks. The principal sources of risk which claim consideration in determining the question, what on the whole will be most profitable for a series of years to raise for market? are special liabilities to failure of crop, to fluctuations in price, to losses from disease, decay, or shrinkage, and, with respect to sheep-husbandry, to destruction by dogs. In some localities the liability to some one or more of these risks

is so great as to make it unwise, for this reason alone, to engage in raising farm products which, in other localities less exposed to the same risks, are most remunerative. For example, in two localities wheat may bring the same price in market and in some seasons yield equally well; but in one it is a sure and in the other a very uncertain crop. With respect to some productions, the variations in market price from year to year are so small that when the cost of production is known the rate of profit can be estimated beforehand with a good degree of certainty; in respect to some others, the price is so fluctuating that estimating profit beforehand resembles estimating gain from buying a lottery-ticket. Says a correspondent: "The production of wool is profitable at present, but the price fluctuates so much that perhaps by the time the farmer gets well stocked with sheep it will be too low to be a paying business." Generally speaking, the judicious sheep-raiser will guard against the risk here referred to in two ways: first, by avoiding the extreme to which the fluctuation is owing in part—that of letting sheep-husbandry, when wool is high, eat out all other production, instead of relying in part upon products less variable in price; and, second, by raising sheep with reference to profit from lambs and mutton as well as wool. This branch of agricultural industry, requiring but little labor and no skill, and greatly enriching the land, perhaps as profitable as the other, but the exposure to loss by dogs is so great that we shall give our correspondents considerable space for reiterating their often-uttered complaints:

Luzerne, Pa.—In consequence of the large number of dogs our farmers are fast abandoning the raising of sheep.

Clinton, Pa.—A few farmers raise wool, but, on account of the poor quality of the sheep and the ravages of dogs, it is a losing business.

Henry, Va.—Wool-growing would be profitable if sheep could be protected from dogs.

Prince William, Va.—Wool and mutton perhaps the best for profit, if it were not for so many worthless dogs. They are a great detriment to the agricultural interests of our State. If every dog should be killed, millions would thereby be saved to farmers.

King George, Va.—If we could insure the safety of sheep from dogs, the sale of mutton, lambs, and wool would yield us our highest profit.

Smyth, Va.—Sheep and wool-raising would be a profitable business were it not for the hundreds of sheep-killing dogs.

Wythe, Va.—A great many more sheep would be kept if it were not for fear of the dogs, since they are thought very profitable, both for wool and mutton.

Chatham, N. C.—Much more attention would be paid to sheep-raising if some legislation—State or national—could be procured to relieve growers from the ravages of dogs.

Cobb, Ga.—The production of wool is abandoned on account of destruction of sheep by dogs. It is estimated that we have fifty dogs to one sheep.

Laurens, Ga.—Away from the negro and his dogs, flocks of sheep pay *very well*.

Hamilton, Ga.—This is a fine country for wool, but there are too many dogs, to raise sheep; otherwise fortunes could be quickly made by raising them for fertilizing land, for wool, &c.

East Feliciana, La.—The dogs have killed all the sheep.

Cherokee, Texas.—Wool would be one of our most profitable products were it not for dogs.

Campbell, Tenn.—Sheep would pay but for dogs and wolves.

Giles, Tenn.—Wool-production would pay handsomely if our sheep could be protected from destruction by worthless dogs.

Union, Tenn.—Sheep-raising is most profitable, but not practiced much for want of a wholesome dog-law.

Boone, W. Va.—If it were not for dogs, sheep would be made the most profitable here.

Monongalia, W. Va.—Wool-growing would be by far the most profitable, were it not for the destruction of sheep by dogs. Many who were largely engaged in this business a few years since have had to give it up, owing to this cause.

Lee, Ill.—Dogs are too plenty for sheep to prosper yet.

Kankakee, Ill.—Too many dogs for sheep.

Atchison, Kansas.—Sheep would be profitable were it not for the droves of worthless curs that infest all new countries.

PROFITS AS AFFECTED BY LOCATION, SOIL, AND CLIMATE.

A farmer's ultimate success depends very much upon the degree of sagacity with which he avoids competition in market with those who have great advantages over him in respect to location, soil, and climate, and confines his efforts, as far as practicable, to productions for market for which his section has equal, if not superior, advantages in these respects. Market-gardening and the growing of small fruits and berries are among the most remunerative branches of agriculture where there is a good market practically near at hand. But with an equally favorable soil and climate, the profits diminish very rapidly as the distance from market increases, owing to the cost of transportation and increased liability to depreciation. On the other hand, at a point of distance from market where these branches cease to be remunerative, the production of wool, butter, beef-cattle, horses, mules, &c., may be much more profitable than it would very near the consuming market, because the cost of placing in market (in proportion to value) is much more than counterbalanced by decrease in cost of pasturage, hay, and feed. Other things being equal, the profit on animals for stock or meat must decrease and the length and severity of winter increase. "The feeding of grain and hay for beef and pork will never be profitable in Northern Wisconsin. Iowa and other prairie States can convert their cheap corn into beef and pork for one-half less than we can produce them." But the same correspondent adds: "Dairy-farmers can feed all their field-crops with profit. The locality is well adapted to cheese and butter, and the sooner the farmers take to dairying the better." The producers of some staples for market have great advantages with respect to location, of others with respect to soil and climate, and as a rule it is unwise for farmers outside of those ranges to attempt to compete in market with those within, (except when the advantages of location counterbalance those of soil and climate, and *vice versa*,) especially when there are other farm products in respect to which they have like advantages themselves. With almost all farmers who keep work-animals, a variety of fruits and berries, and of garden, dairy, and poultry products, may be raised to the extent needed for home-supply with no additional cost for team, tools, or machinery, and but little, if any, for labor; and therefore it may be wise for one to raise such products for home use when it would be great folly in him to attempt to compete with one or more of them in market with others having great local or climatic advantages over him.

BRANCHES OF FARMING AT PRESENT DEEMED MOST PROFITABLE.

Some of the special reasons assigned for regarding different branches of farming as most profitable in the localities and sections where they respectively receive the preference are quite suggestive. A few specimens in connection with the leading branches of agricultural industry are here given.

Mixed husbandry.—Some of the special advantages claimed for mixed husbandry are that it affords opportunities for utilizing products that would otherwise be wasted, for reducing the cost of marketing by concentrating values, for rotation and otherwise increasing the productiveness of the farm, and it guards against the disasters to which special farming is exposed from fluctuations in market. "Mixed farming pays best in the State, (Tennessee,) and always will, because, when one thing will not pay expenses, it can be held for a rise, and something

else sold at high figures." "Rather than ship corn to eastern markets, the farmer diversifies his time by raising all kinds of stock, dairying, &c. One result of this is that corn here (Steele County, Minnesota) is worth two or three times as much as in Central and Western Iowa." "By mixed farming all waste is avoided, and economy can be carried to its greatest extent." "Cotton, being ready money and less liable than other crops to waste or loss of any kind, aids the new immigrant in building up his fortune more rapidly than any other crop. But the prudent and diligent farmer, after the appointments of his farm are complete, can make more by diversity of crops, with a moderate amount of stock properly cared for and handled. This opinion has been formed after a long residence in Texas." "Stock is required to consume the corn, pasture to keep the cattle, and rotation to preserve the condition of adaptation to both. An intimate acquaintance of twenty years, with close observation, convinces me that farmers with corn-fields, hogs, and cattle have prospered, while wheat-fields have produced fox-tail, weeds, depletion of grain, exhaustion of soil, unpaid debts and mortgages, and final removal to a new country."

Sheep-husbandry is regarded as most profitable in Pike County, Illinois, "because most of the land can be kept in pasture and is not wearing out, the increase nearly paying for keeping, and one has the wool left for profit;" in McLean County, because "sheep will keep the land up with less labor from man than anything else;" in Douglas County, Oregon, because "there is a good demand for wool, which will bear transportation all over the world for market without deterioration, and there is very little trouble attending sheep, since in nine cases out of ten they make their own living the year round;" in Green Lake County, Wisconsin, "because wool can be kept over in a dull market, and brings nearer the eastern price than any other farm product;" in Carrol County, Missouri, "because so little labor is required, and it affords two sources of profit: wool and mutton;" in Amador County, California, because "two men and three or four dogs will herd a band of five thousand sheep. The account will stand: Interest on five thousand, at $3 per head, 10 per cent., $1,500; cost of herding, at $75 per month, (two men,) $900; shearing, 7½ cents per head, $375; total, $2,775. Contra: 15,000 pounds of wool, at 35 cents, $2,250; increase of herd, 3,000, at $3 per head, $9,000; total, $11,250. Net profit, $8,475." In Woodson County, Kansas, it is deemed the most profitable, "because pasturing costs nothing and wintering only 25 to 30 cents per sheep. The annual addition to the soil in the way of fertilizing by 'folds' is equal to one-half the expense of keeping, and wool is always in good demand at paying figures. We have an extensive woolen factory in operation in this county, that makes a good home market."

Dairying requires but a small amount of capital, demands less labor, teams and machinery than most branches, provides profitable employment for both the male and female members of the family, keeps up the fertility of the land, concentrates the values of other farm products, and its products can be put in market at favorable seasons and comparatively small cost.

Outagamie, Wis.—The products of the dairy are about the only farm products that will bear transportation under the present rates of tariff; besides, they do not impoverish the soil as much as crops sold off.

DeKalb, Ill.—An establishment for butter-making has been in operation in an adjoining county, and last season every pound of butter made in it was sold to a hotel in Saint Louis at much above the commercial value in Chicago.

Stock raising.—As is claimed, this business brings the most money for the

least work; obviates the difficulties of scarcity and unreliability of labor; does not wear out but enriches the land; turns grass into money without the cost of making it into hay; can be sent to market on foot, independent of railroads; is not generally liable to great risks; compels the keeping a large part of the farm for grazing, and so induces better tillage by the necessity of raising large crops on small areas; "can always be sold for cash at prices sufficiently high to better pay the farmer for his grain and hay than selling the same by the bushel and ton;" "gives the land an opportunity to rest from too frequent cropping and deposits the manure without the expense of carting."

Delaware, Ohio.—Hay is too bulky to ship, and we think it would be ruinous policy, impoverishing our land, to let it go off our farms. Corn and oats are too low in price (30 to 40 cents per bushel) to bear transportation, but we can sell them in the shape of wool, fat sheep, or bullocks, which will bear transportation and give us a profit of at least 50 per cent. over the raw material.

The following extracts are illustrations of special reasons of local application:

Denton, Tex.—Our people are averse to continuous labor, and the cattle take care of themselves.

Crittenden, Ark.—Stock can feed themselves the year round.

Tooele, Utah.—The stock-raiser relies on the ranges all the year round for the sustenance of his animals. He has no fence to build or repair; needs no barns or sheds; no agricultural implements of any kind; only one good riding-horse to look after his stock, and gather them once a month. Beef and mutton are always in demand; they always fetch ready cash. All stock-raisers in this county are rich.

Thayer, Neb.—Stock-raising most profitable, because our grasses are very nutritious, and we can herd out between seven and eight months in the year with no other feed.

Market-gardening.—This, from the nature of its products, is limited to agricultural localities which have easy and quick access to market. With this advantage to start with, it is especially profitable, because it requires but small capital; fertilizers are to be had near at hand; "several crops can be taken from the same ground in one season," and its products are always in demand for cash at remunerative prices. Steam communications, whether by land or water, which open rapid transit between sections of earlier and later seasons, also afford special advantages for market-gardening.

Dallas, Tex.—Railroads, now in process of construction, will open up a market for all the vegetables, particularly the early ones, that our section can raise for many years to come.

Fruit-growing costs less labor and machinery than grain-growing; does not exhaust the soil as that does, and pays better, in a series of years, in proportion to the land occupied, than anything else. "Sandy and gravelly soil (in New York) yields an income of ten to fifty times as much as the same lands would if sown to wheat."

Obion, Tenn.—Fruit-growing is most profitable, because it requires less time, labor, and expense to secure a given amount of money; and land in fruit-trees will bring more money than the same number of acres in anything else. One of my neighbors sold $53 worth of apples off one tree.

Henrico, Va.—Fruit-growing is vastly the most profitable business in the county, especially the growing of small fruits, such as grapes, strawberries, raspberries, &c. Eight thousand pounds of grapes (Concord) may be easily grown on one acre, which, at 4 cents, the price paid by the Richmond Wine Company last year, would clear to the producer not less than $250 net. When one-half of the grapes or more are sold in the open market for twice the price named, the profit is much greater. Strawberries, when well managed, will certainly net a profit of not less than $250 to the acre.

Cotton.—The producers of cotton regard that as most profitable, because "it is a sure crop; simplest to cultivate; stands drought best, and is attended with less loss than any other;" can be raised with "less manure and less exhaustion than other crops;" "is three times as

profitable as corn, wheat, and oats;" yields a net profit of fully $30 per acre, and "our people know more about it than they do about anything else."

Rankin, Miss.—Cotton is most profitable, because it is more certain and abundant in its returns; less exhausting to the land; most marketable as regards demand and cost of transportation; affords profitable occupation during the entire year; avoids the necessity for the many and various implements and processes required for a diversified husbandry; is comparatively safe from damage by the weather after the crop is made; and is not liable to depredations of petty thieves.

Tobacco.—Is considered most profitable by its producers, because it is "less expensive and troublesome to market than grain; pays better to the acre; and the market is rarely if ever glutted." "It requires but little land and capital, and all the family (old and young, male and female) can work in it to better advantage than in any other crop." "More than $100 per acre can be realized from it."

Wheat.—Those who make the growing of wheat a specialty regard it as most profitable, because it requires less capital to begin with than stock-raising and some other farm industries; its production is very simple, and "one can turn his labor and the use of his land into money so much quicker with this than with anything else." "Sown from March 15 to April 1 (in Iowa) and ready for market in the following August."

Although not the most profitable, it is the only crop the Minnesota farmers can rely upon to raise money to pay debts.

Kalamazoo, Mich.—Wheat is undoubtedly with us the most profitable crop, as a general rule, as comparatively little skill and labor are required to produce an average crop, and there are fewer risks and less fluctuations in price than in other products.

Corn and hogs.—These in the corn-growing sections are usually coupled together, and are regarded as specially profitable products on account of their mutual relations, both requiring "short outlay in labor and capital" and yielding quick returns. "As soon as the hog is one year old, and *six months* after planting the corn, the farmer can pocket the proceeds of his investment." In Tennessee corn is preferred to wheat, "because a more reliable crop."

In the following summary the figures include the number of counties which report the branch named as deemed most profitable, whether exclusively or in connection with one or two other branches. For example, one county reports "dairying," and another "dairying and sheep-raising." The second, as well as the first, is included under the head of "dairying." It is also counted under the head of "sheep-husbandry." That is, the figures do not necessarily mean that so many counties are reported as deeming the branch named as *exclusively* the most profitable, but in a part of the instances that that and one, two, or three other branches named are so deemed. Out of eight hundred and seventy-two counties responding to the question, "What branch of farming is at present deemed most profittable?" the reports are as follows:

Dairying, 104, namely: New York, 23; Pennsylvania, 10; Vermont and Iowa, 9 each; Wisconsin, 8; Ohio, Illinois, Virginia, and California, 5; Minnesota, 4; Michigan and Missouri, 3; Maryland, New Jersey, Texas, and Indiana, 2; New Hampshire, Massachusetts, Connecticut, Louisiana, Kansas, and Utah, 1.

Mixed husbandry, 91: Indiana, 14; Pennsylvania, 9; Virginia and Wisconsin, 8; Louisiana and Illinois, 7; Michigan and Iowa, 6; Missouri, 5; New Jersey, 3; New Hampshire, New York, Maryland, Georgia, Minnesota, and California, 2; Vermont, North Carolina, Alabama, West Virginia, Kentucky, and Oregon, 1.

Sheep husbandry, 142: Ohio, 17; Iowa, 12; Illinois and Michigan, 10; Missouri and Indiana, 8; Virginia, 7; Minnesota, Texas, and Cali-

fornia, 6; Wisconsin and Kansas, 5; New York and Pennsylvania, 4; Vermont, Virginia, North Carolina, and Oregon, 3; New Hampshire, New Jersey, Arkansas, and Nebraska, 2; Massachusetts, Connecticut, Maryland, South Carolina, Georgia, Mississippi, Tennessee, Kentucky, and Utah, 1.

Fruit-growing, 71: Ohio, 9; Missouri, 7; Maryland, 6; Kansas and Indiana, 5; New York, 4; Pennsylvania, New Jersey, Georgia, Michigan, and California, 3; Massachusetts, Virginia, Kentucky, and Nebraska, 2; Vermont, Connecticut, North Carolina, Florida, Mississippi, Louisiana, Texas, Arkansas, Tennessee, Illinois, Wisconsin, Iowa, and Oregon, 1.

Market-gardening, 33: Virginia, 7; Massachusetts and Pennsylvania, 4; New York, New Jersey, Maryland, Ohio, 3; Texas, 2; Indiana, Michigan, Missouri, California, and Utah, 1.

Stock-raising, 273: Missouri, 34; Iowa, 30; Kansas and Illinois, 27; Indiana, 17; West Virginia, 16; Kentucky and Ohio, 14; Tennessee and Minnesota, 10; Virginia and Nebraska, 9; Texas, 7; Pennsylvania, Wisconsin, and California, 6; New Hampshire and Utah, 4; North Carolina and Georgia, 3; Vermont, Arkansas, Michigan, and Oregon, 2; Connecticut, New Jersey, Maryland, Florida, and Alabama, 1.

Pork, 37: Iowa, 9; Illinois, 7; Indiana, 5; Missouri, 4; Kentucky and Ohio, 3; Tennessee and Michigan, 2; Kansas and Oregon, 1.

Cotton, 166: Texas, 30; Mississippi, 27; Georgia, 26; Alabama, 22; North Carolina, 18; Arkansas, 14; Louisiana, 10; South Carolina, 9; Tennessee, 5; Florida, 3; Virginia and Missouri, 1.

Tobacco, 66: Virginia, 19; Kentucky, 17; North Carolina, 6; Tennessee, 5; Missouri, 4; Pennsylvania, 2; Vermont, Massachusetts, Connecticut, New York, Maryland, Ohio, and Indiana, 1.

Wheat, 133: Missouri, 14; Indiana and Minnesota, 13; Iowa, 12; Ohio and Michigan, 10; Illinois, 9; Wisconsin, 8; Pennsylvania, Texas, and Tennessee, 7; California, 5; Virginia, 4; West Virginia, Kentucky, and Nebraska, 3; North Carolina, South Carolina, Alabama, Oregon, and Utah, 1.

Corn, 137: Missouri, 16; Ohio, 14; Illinois, 12; Iowa, 10; Mississippi and Texas, 9; Tennessee and Kentucky, 7; Arkansas and Kansas, 6; Indiana, 5; Pennsylvania, Virginia, North Carolina, Georgia, and West Virginia, 4; Louisiana, Michigan, Wisconsin, Nebraska, and Utah, 2; Maryland, South Carolina, Florida, and Alabama, 1.

COMPARATIVE PRICES OF FARE-LANDS.

In 1868 a very full report of prices of farm-lands was made, including a comparison for each State with prices of 1860. The returns were sufficiently full to insure an approximation to accuracy in the State averages. A decrease was shown in all the States comprising the theater of war in the intervening years, and an increase in all others, partly real and partly nominal, monetary inflation having something to do with the increase. Since 1868, as appears from returns of our March circular, there has been a small decline in the Northern States, and generally an increase in the South.

In the Eastern and Middle States the increase, wherever it exists, arises from proximity to growing cities or the extension of successful manufacturing. In the South the local variation is remarkable, from utter stagnation in places not affected by a spirit of activity and progress, to great rapidity of advance resulting from immigration, manu-

facturing, increase of transportation facilities and an effort for improvement. The decline in prices of farm produce, and the various discouragements complained of in the West, have had some effect upon prices there.

The following table shows the comparison between 1860 and 1868, as reported in the former investigation:

States.	Increase, per cent.	Decrease, per cent.	States.	Increase, per cent.	Decrease, per cent.
Maine	19		Mississippi		65
New Hampshire	17		Louisiana		70
Vermont	17		Texas		28
Massachusetts	17		Arkansas		55
Rhode Island	18		Tennessee		18
Connecticut	20		West Virginia	32	
New York	28		Kentucky	10	
New Jersey	30		Missouri	32	
Pennsylvania	25		Illinois	42	
Delaware	66		Indiana	27	
Maryland	20		Ohio	32	
Virginia		27	Michigan	70	
North Carolina		50	Wisconsin	50	
South Carolina		66	Minnesota	100	
Georgia		55	Iowa	75	
Florida		55	Kansas	150	
Alabama		60	Nebraska	175	

The returns upon this portion of our circular for March were not complete, and the attempt to establish State averages is therefore less satisfactory, yet the results of such generalization harmonize substantially with the averages of 1868, allowances being made for the modifying influences at work upon prices in the different sections. These are not given as *State averages*, but averages of the counties reported in comparison with 1860.

States.	No. of counties reporting.	Increase.	Decrease.	States.	No. of counties reporting.	Increase.	Decrease.
		Per cent.	Per cent.			Per cent.	Per cent.
Maine	3		13	Texas	38	50	
New Hampshire	4		11	Arkansas	13	20	
Vermont	7	23.		Tennessee	35	5	
Massachusetts	5	8.		West Virginia	18	20	
Connecticut	2	13.		Kentucky	28	5	
New York	28	34.		Ohio	40	30	
New Jersey	6	28.		Michigan	24	60	
Pennsylvania	30	32.		Indiana	43	26	
Delaware				Illinois	44	37	
Maryland	8		17	Wisconsin	22	44	
Virginia	41		25	Minnesota	23	85	
North Carolina	34		17	Iowa	40	70	
South Carolina	7		38	Missouri	44	26	
Georgia	38		15	Kansas	19	175	
Florida	7		47	Nebraska	6	175	
Alabama	22		42	California	13	10	
Mississippi	25		44	Oregon	5	45	
Louisiana	12		29	Utah Territory	3	73	

A few extracts, which exhibit something suggestive as to prices and the cause of change in rates, are appended:

MAINE.—*Androscoggin:* Value has increased to some extent in the vicinity of villages. *Piscataquis:* Farm-lands are increasing owing to the lumber manufacturing and opening of a railroad through the county.

VERMONT.—*Windham:* On the line of railroad the farms are increasing in value, while at more remote points from market the price is decreasing.

MASSACHUSETTS.—*Middlesex:* Suburban lands increase in value from the influence of increasing population. *Bristol:* Farm-lands in the immediate vicinity of cities are worth at the present time double their price ten years ago. *Berkshire:* Farm-lands are higher than in 1860; but not so high as in 1865.

RHODE ISLAND.—*Washington:* Farm-lands have steadily increased in value along the shore, while those a few miles distant have as steadily and perhaps more rapidly decreased. Shore-farms are worth 25 to 45 per cent. more at present than in 1860—remote lands remain about the same.

NEW YORK.—*Chenango:* Farm-lands are not selling as high as they were two years ago. *Ontario:* Lands are firm with an upward tendency. *Monroe:* Average price about $100 per acre, small places much higher. *Livingston:* Farm-lands are improving in value at the present time; not much higher than in 1860. Good farms in this county are worth $100 per acre; those near railroad-stations often sell for $200 per acre. *Rensselaer:* Farm-lands are increasing in value from 25 to 100 per cent., and more in some cases. *Jefferson:* Farms can be bought 10 per cent. less than two or three years ago. *Ulster:* Land in this county has doubled in value since 1860 on account of our good markets—caused by manufactures, working quarries, and building railroads through the county. *Montgomery:* Farm-lands are decreasing in value at present. *Otsego:* Owing to falling prices farm-lands are not as ready of sale or at as high a price as two or three years ago. *Madison:* The value of lands compared with 1860 is about $10 per acre higher.

NEW JERSEY.—*Bergen:* Farming lands for *farming purposes*, all things considered, are worth no more to-day than they were in 1860. *Warren:* Farm-lands have advanced since 1860; from 1866 to 1869 they advanced 80 per cent., and have now fallen back about 40 per cent. *Hunterdon:* Farms are worth about as much in currency as they were in 1860; lands are going down both in fertility and value.

PENNSYLVANIA.—*Clearfield:* Timber-lands have increased in value at least 300 per cent. since 1860. *Washington:* Farm-lands are increasing in value slowly and steadily by reason of improvements, both public and private. *Mercer:* Farm lands are increasing in value. The causes of rise are large manufactories of iron, and large export of coal, and the facilities of five railroads traversing the county. *Fulton:* The best of farms here that could have been bought in 1860 for $40 or $50 per acre, would bring now from $75 to $100; the poorer farms that could then have been bought for $10 to $15 per acre, would now bring $25 or $30. *Indiana:* Land ranges here from $15 to $60 per acre; rough timber-land has advanced more than 50 per cent.

VIRGINIA.—*Spottsylvania:* The price has fallen 50 per cent. since 1860. The farmers are anxious to sell their surplus land, and will give a cordial welcome to all who may wish to settle among them. *Chesterfield:* Increasing; our cheap lands, which have been so long overlooked, are beginning to be appreciated, with a little disposition to advance in the middle and northern portions of the county, especially along the lines of the three railroads running through it, and more especially near and in the growing town of Manchester. *Roanoke:* Our best farm-lands are increasing in value, while thin lands are decreasing in about the same ratio. *Nelson:* Decreasing; from 20 to 50 per cent. less. Very poor lands can scarcely be sold at any price; where the fertility of the land has been maintained and the buildings and fences kept in repair the reduction in price is much less. *Nansemond:* For truck-lands, increased; for farm-lands, very much diminished since 1860. *Powhatan:* Lands have been sold in the county, recently, at $3 to $10 per acre, and there are numbers of farms for sale which could be purchased at those figures.

NORTH CAROLINA.—*Warren:* Lands immediately on the railroad have advanced, probably, to their price in 1860, on account of immigration; but those removed from the railroad are not in demand. There are not less than 50,000 acres in the county for sale. *Jones:* Lands adapted to cotton have increased in value at least 25 per cent., and some as much as 50 per cent; while lands not adapted to cotton, but only to grain, have decreased in a corresponding ratio. *Burke:* Good farms of from 200 to 500 acres can be bought at from $1,000 to $5000. *Pasquotank:* Increasing. Because of the large number of farmers who have emigrated from Pennsylvania and New York to this county in the last three years, (they now own one-fifth of the land and pay one-fourth of the taxes,) land has advanced in price very much. It is not generally as high as in 1860; but in some instances, near town, it is much higher than ever before. *Bertie:* The lands that are cultivated regularly are improving in quality, but decreasing in quantity. The large farms, say of 1,000 acres and upward, have decreased in value since 1860 about 50 per cent., except those on the water-courses, the value of which remains about the same. *Cumberland:* Increasing; worth about as much now as in 1860; from $7 to $20 per acre, half cash and one or two years time on the balance.

SOUTH CAROLINA.—*Union:* Farm-lands were higher before the war than at present, but are gradually increasing in value. *Darlington:* Improved places are worth $8 per acre; unimproved, $4 per acre. *Marion:* The average value is about the same as in

1860, though not nearly so uniform. Well-improved lands sell higher than in 1860, while poor, unimproved, sell cheaper.

GEORGIA.—*Hart:* Good farms, since 1865, have, in many instances, doubled their value. Poor lands, thousands of acres of which are turned out, have not increased much in value since that time. *Marion:* In 1860 farm-lands were worth from $10 to $20 per acre; at present, from $7 to $15. *Forsythe:* Worth 60 per cent. more than in 1860, and 25 per cent. more than four years ago, and still are low, ranging from $2 to $20 per acre. *Brooks:* Lands that sold freely, in 1860, at $20 per acre, are upon the market now in large quantities, at low prices, say $3 to $5 per acre. *Wilkes:* Certainly decreasing in *real* value, and, under the present system, their becoming entirely worn out and worthless is only a question of time. From tightness in money matters, mostly, lands generally will not command as good prices as two or three years ago; but within a few miles of town or railroad communications, they are much higher than in 1860. *Franklin:* Farm-lands worth $10 per acre; wild lands, $1 to $3. *Douglas:* Increasing; 20 per cent. higher than 1860; but timber-lands 20 per cent. cheaper. *Effingham:* Not improving in value; worth from $1 to $3 per acre. *Cobb:* Increasing; average value equal to that of 1860, or $10 per acre. In some cases land that sold in 1867 and 1868 for $5 per acre would now sell for $20. *Barton:* Increasing; notwithstanding the ravages of war and consequent impoverishing of our people, their lands are all 10 per cent. higher than in 1860, and very much higher than in 1866. *Gwinnett:* Increasing rapidly; one-third higher. *Carroll:* Increasing on account of new railroads running through the county; 100 per cent. more valuable than in 1860. *Pickens:* Have decreased in value, uplands at least 100 per cent. compared with 1860. Know of nothing that will remedy us except a railroad. We have one of the finest counties in the State, abounding in iron ore, marble, and inexhaustible, never-failing water-power. All we need is to have our resources developed.

FLORIDA.—*Madison:* Have decreased in value astonishingly. Plantations which in 1860 sold for $10 to $15 per acre could not now be sold for $5; indeed there is no demand. A man will pay for the rent of an acre for one year more than he will agree to give per acre for the whole farm. Lands worth in 1860 $5 to $10 per acre are now a "drug" in the market at $1 to $2 per acre. *Hamilton:* A farm valued in 1860 at $5,000 would not sell now for $500. There has been no immigration to this county, and there are none to buy; yet we have as good lands as can be found in the State, and far better than some counties in which lands are valued at much higher figures than ours, because there happens to be some immigration.

ALABAMA.—*Conecuh:* About as low as they can get. Lands that would sell for $10 to $15 per acre in 1860 will not sell now for more than $3 per acre. Good lands can be purchased cheaper in this county than in any other place in the Union. Causes: taxes, emigration to Texas, and want of money. *Dallas:* Many farms here can now be purchased for $5 per acre that could not have been bought for $30 per acre in 1860. *Macon:* The average market-price is now about $3 per acre; in 1860, $8 per acre. *Perry:* Farms worth $30 to $50 per acre in 1850 are now worth $5 to $10. *Clarke:* Have decreased; average price about $5 per acre. *Wilcox:* Nearly valueless. There is really no market-value. Well-improved plantations can be had from $5 to $10 per acre. *Lauderdale:* Had increased in value since the depressed prices of 1865 and 1866 up to 1870. Many northern farmers had come in, bought, and made a demand, and land went up. But they have nearly all failed to succeed with the labor, and many of them have left, and there being no demand land is down. There is a German settlement forming, and as they use their own labor, and buy cheap lands and manure, we hope they will succeed. The best improved river places, with bottom-lands in part, are rated about $25 per acre; uplands, with good improvements, from that all the way down to $1 per acre; average about $8.

MISSISSIPPI.—*Noxubee:* Increasing; prairie lands worth about 60 per cent. of what they were before the war, (present value $12.50 per acre;) sandy land, being in small bodies, admitting of small settlements, and giving wood and water, is worth nearly as much as before the war; (present value, $10 per acre.)

LOUISIANA.—*Richland:* Everything is depressed in this county. Farms that would readily have brought $40 per acre in 1860, can now be purchased for $10. *Jefferson:* There is no sale for farms. I attended the forced sale of a plantation a few weeks ago; the property was worth $300,000 in 1860; it sold for $50,000. *Tensas:* Farm-lands are decreasing in productiveness; but the market-value is increasing just in proportion to amount of available labor in the parish. This increase of labor comes from the poor hills of Mississippi, and from Virginia and the Carolinas. *Concordia:* The price of land is nominal; there is very little capital to invest; a desirable plantation can be bought for $30 per acre, that being about the highest price. *Franklin:* Compared with their value in 1860, prices range at about 25 per cent.; for example, lands which commanded $10 and $20 per acre at that time, cannot now be sold.

TEXAS.—*Freestone:* Increasing constantly. From the great decrease in value caused by the recent war, they are about recovered. *Victoria:* Lands that will produce from 30 to 80 bushels of corn per acre can be bought at from 50 cents to $20 per acre, the location

determining the relative price. *Atascosa:* Farming lands that could have been bought in 1860 for $3, are now worth $5 to $10 per acre. *Titus:* The uncertainty of labor of late years has done much to decrease the value of farm-lands; but this uncertainty is now to some extent giving way, and they are again increasing, and prices now range about the same as in 1860. *Lampasas:* Average price of good arable unimproved lands, $1.50 per acre; improved tracts, $4 to $5. *Fort Bend:* Farm-lands that now command $10 per acre, in 1860 commanded $50. Many plantations which then changed hands at $40 to $60 per acre, have within the last three years changed hands at $3 to $10 per acre. A plantation purchased in 1859, at $50 per acre, was sold by the administrator of the purchaser in 1867, and bought by myself, at $4.50 per acre; its value now is about $10 per acre. *Grimes:* Prices in 1865–'66–'67–'68 went down to as low as 30 per cent. of the price in 1860, and since then have been improving; now about 75 per cent. *Williamson:* Good improved farms are selling at $8 to $15 per acre; unimproved, at $1 to $5; all depending on the amount of timber. The State is fast settling up with a better class of immigrants, and lands have advanced more in the last year than in the ten previous. *Coryell:* Good farming lands are increasing in value greatly. Good lands that could have been purchased in 1860 for 50 cents per acre, now command $15 to $20 in gold. Lands of the best quality, the river-bottoms, are worth from $5 to $12 per acre in their wild state. Good prairie lands can be purchased for $2 per acre.

ARKANSAS.—*Prairie:* Lands in farms, worth before the war $50 to $80 per acre, are scarcely now worth more than $20 to $30. Wild lands that sold in 1862 for $30 in gold are now offered for $5. *Columbia:* Many tracts have sold at less than $2 per acre within the last few years. Every man who depends upon hiring or renting wants to sell. In 1860, lands with improvements on them would sell at $5 to $7 per acre; land unimproved, at $3. Our best farms could now be bought in tracts of 400 to 1,000 acres at $2.50 to $4 per acre, on one or two years' time. Smaller tracts a little more. *Marion:* Farm-lands are increasing in value; they are worth now what they were in 1860; they had decreased largely during the war. Lands that were worth $5 per acre in 1866 are now worth $20 per acre. *Montgomery:* Farm-lands are increasing in value, owing to emigration, but not largely; say 10 to 15 per cent.

TENNESSEE.—*Campbell:* Increasing. From 15 to 25 per cent. higher. *Rhea:* Increasing. A farm was sold in 1862 for $5,000; resold in 1872 for $13,500. *Blount:* Good lands are one-third higher now than in 1860; poor lands have changed but little, except near Maryville and along the railroad. *Fentress:* At the close of the war, lands were worth nothing in money. Within the last three years vast tracts of wild lands have changed ownership at 5 to 30 cents per acre, going mainly to Pennsylvania speculators, and will not be on the market again at less than about as many dollars per acre as they cost cents. *Henry:* In 1860, $20 per acre was an average price; in 1866 and 1867 $10 per acre; now, $15. *Knox:* The best lands are increasing in productiveness and value. The third and fourth rate lands are decreasing for want of system and proper rotation of crops. Average increase of value about 30 per cent.

WEST VIRGINIA.—*Berkeley:* Limestone lands throughout the entire county are now worth $50 per acre; along the more public roads and in to market, $80. Slate lands of good quality, $30 to $35, owing to location and improvements. *Preston:* Since the close of the war till within the last year or eighteen months, lands have advanced 33⅓ per cent. in value, but are now depreciating owing to the cramped condition of the finances. *Tucker:* Land is decreasing in value. *Fayette:* Improved lands rate from $5 to $20 per acre; land in the woods, from $1 to $3.50; before the war it rated from $2 to $5. *Randolph:* Farm-lands are worth about $5 per acre more than in 1860.

OHIO.—*Tuscarawas:* Farm-lands have increased in value since 1860 materially, in consequence of the mineral deposits, such as heavy deposits of black band and other varieties of iron ore, and extensive coal deposits, which are being developed by the location of new railroads. We also have the best of clay and limestone in abundance. *Champaign:* Farm-lands are not increasing in value at present. They have already come to be rated above what they are worth for farming purposes. *Medina:* Farm-lands are decreasing in value at present, both intrinsically and actually. *Trumbull:* The value of lands is continually on the increase, and are worth on the average $15 per acre more than in 1860.

MICHIGAN.—*Kent:* The average value compared with 1860 is from 75 to 100 per cent. higher, owing in part to increased railroad facilities, and in part to the general increase of values, and in part to the better standing and appreciation of our State as a farming State.

INDIANA.—*Scott:* Farm-lands are increasing in value. The increase will average about $5 per acre since 1860. *Decatur:* Good land is worth about $8 per acre more than in 1860. *Hamilton:* Lands have been about stationary for the last ten years. Timber-lands are nearer equal with cleared. The advance since 1860 has been from $10 to $15 per acre. *Jennings:* Farms are lower here than in 1860, on account of the fact that so many railroads have been built west and have opened up so much wild cheap fertile land.

ILLINOIS.—*Cass:* Decreasing. Now down almost to the price in 1860. In 1869 and

1870 improved land ranged from $40 to $75 per acre; now, from $30 to $50. *Richland:* During the past two years farms have not advanced over 5 per cent. on the value of 1870, and this has been caused by the improvements made on them. From 1860 to 1870 the increase in price was over 100 per cent. *Hancock:* The intrinsic worth of land is not now as much by $10 per acre as in 1860, but the numerous lines of railroad built through the county since 1860 have caused it to be 50 per cent., and in many cases 100 per cent., higher than then. *Morgan:* The best farms now are held at $75 per acre, and none less than $35. *Ogle:* Present prices from $25 to $80 per acre, according to location and improvement. *De Witt:* Not so valuable as they were five years ago, but at least 33⅓ per cent. higher than in 1860. Decreasing in value at present, owing to the extremely low price of farm products of all kinds. *Clark:* Increasing, at least 50 per cent. since 1860, besides the increase in value by improvements, which is at least 50 per cent. more. *Winnebago:* Land worth $20 to $25 per acre in 1860 was worth $40 to $45 in 1870; since then it has not depreciated nor advanced, except near fast-growing cities. *Boone:* On account of improvements farms are higher than in 1860, but decidedly lower than in 1868, because of the decrease in the prices of farm products. *Lawrence:* The western fever for cheap lands and free homes is a constant drain on our population, and causes land to be sold for less than its real value. *Macoupin:* About the same price as in 1860, but they have been much higher. *Putnam:* Good farms are worth $45 to $75 per acre. *Madison:* About 40 per cent. since 1860; where more capital has been used for improvements the percentage is of course greater. It is an accumulation, not an increase. *Peoria:* Decreasing, owing to the rapid development of the States farther west, which has attracted all the emigration, even drawing on the population and capital of this State; to the fact that agriculture does not pay, and to the general depression in business. *Lee:* Decreasing. Cause: railroads running west through large tracts of cheap lands where wheat and other grain can be raised and sent here for less than we can raise it. Good farms can be bought here for $25 to $50 per acre, with good, fair improvements, that would have brought, in 1860 to 1865, $30 to $75 per acre. *Stephenson:* About on a par with 1860, but 25 per cent. less than four years ago. *McLean:* Decreased in value the last five years, but about the same now as in 1860. Are now better improved, and perhaps with the improvements would sell 10 per cent. higher.

WISCONSIN.—*Outagamie:* All farms, especially those which have not been cropped to death by cultivating wheat, have increased in value since 1860, average about 25 per cent. *Saint Croix:* Increased since 1860, on the average, 25 per cent.; timber-lands fully 100 per cent. The completion of the West Wisconsin Railroad to Hudson, on Lake Saint Croix, and the connections by railroad with Saint Paul, Minnesota, have greatly enhanced the price of farm-lands. *Fond du Lac:* Farms that sold in 1864 for $75 to $80 per acre are now down to from $55 to $60. *Dodge:* Decreasing, except wood and timber lands, which are rising; about 20 per cent. higher than in 1860, and about 20 per cent. lower than four or five years ago. *Brown:* Increasing, on account of the iron-smelting furnaces in the county, and new railroads. *Vernon:* Under the wheat-growing system farming lands are decreasing in productiveness, but still are increasing in value owing to increasing population. Lands in the old-settled parts that were worth $25 per acre in 1860 are now worth $30, and in more recently-settled parts they have doubled in value. *Green Lake:* Decreasing, though worth more than in 1860. They have been much higher since that date than they are now.

Waukesha: Improved lands range in price from $20 to $30 per acre; improved farms from $40 to $65 per acre; close to villages, $100 per acre.

MINNESOTA.—*Goodhue:* About five years ago there was a great decline in the market-value of farms; during the last three years farming lands have remained about stationary. *Watonwan:* In 1860, 95 per cent. of the land was held by the Government at $1.25 per acre. Much Government land in the county yet, and large grants of railroad land. Average market-value of farms now about $12 per acre. *Faribault:* In 1860 most of the county was Government land, which is now worth $10 to $12 per acre.

IOWA.—*Delaware:* Increasing—about double; then worth on the average about $12.50, now $25 per acre. *Appanoose:* Not increasing. In 1860 worth from $3 to $10 per acre, now from $10 to $40, according to location, improvements, &c. *Clinton:* Have increased 100 per cent. since 1860. *Boone:* Increasing quite rapidly. More than half the farms in the county have been made since 1860. The same land at that time was bought at $3 to $5 per acre; these farms are now worth $25 to $35 per acre. *Sioux:* Increasing rapidly; no farms in the county in 1860. *Cherokee:* Increasing slowly. The price of wild lands is from $3 to $7 per acre, according to distance from market and intrinsic value. In 1860 there were less than one hundred inhabitants in the county, and the average price of land was about $2 per acre. Improved farms are worth $10 to $20 per acre; in 1860 they would not have commanded more than $5 per acre. *Adair:* Market-value in 1860, $5 to $10 per acre; now, $10 to $40 per acre.

MISSOURI.—*Crawford:* Improved lands, $20 to $25 per acre; unimproved, $5 to $12, which is fully double what they were in 1860. *Logan:* In 1860 the lands in this county would probably average in value $2.50 per acre, now nearly $15; some improved lands

$40 per acre. The wild lands rarely sell for less than $10 per acre. *Decatur:* Decreasing; 25 per cent. higher than in 1860. Two or three years ago it was probably 100 per cent. higher than in 1860. *Jackson:* The average value of farms in this county is about $45 per acre. *Woodbury:* Since 1868 some three lines of railroads have been built through the county and are now in operation. The average value of farms since 1860 is doubled. *Grundy:* Decreasing. As nearly all we raise is shipped, railroad-tariffs regulate the price of land. At present corn cannot be shipped, and as our farmers have not the means to buy stock to eat it, they are burning it for fuel. I think 300,000 bushels have already been burned in this county this winter, and yet it sells for 10 cents per bushel. *Poweshiek:* Worth 400 per cent. more than in 1860, but 30 per cent. less than in 1869. *Louisa:* Farm-lands are at least $5 per acre lower than in 1860, and $10 lower than in 1866 and 1867. *Dallas:* Farms that were worth $10 to $12 per acre in 1860 are now worth $25 to $30. *Marion:* Farm-lands along the lines of railroad are now about at a stand; at a considerable distance from railroads they have decreased in the last two years. *Mississippi:* The best farms in this county, situated in most favored localities, have changed but little in value since 1860; other farms which can be reached by men of ordinary means are some 10 or 20 per cent. higher, and wild lands susceptible of cultivation are perhaps from 50 to 100 per cent. higher than in 1860. *Nodaway:* Farms have decreased in value the last year fully 20 per cent., yet are higher than in 1860. *Caldwell:* Land worth $12 per acre in 1860, is now worth $20 per acre. *Boone:* Farm-lands are 20 per cent. lower than two years ago. *Cole:* Prices have decreased materially since 1869, and are about stationary now. The price for 1873 and 1860 is about the same. *Schuyler:* The increase of the price in farm-land has been in the vicinity of railroad stations. *Pemiscot:* Farm-lands were higher in 1860 than at the present time on account of destruction of the levee that was in process of construction. The price of lands has decreased since 1867.

KANSAS.—*Marshall:* This county in 1860 was mostly Government land. Its nine hundred square miles is now worth over three millions of dollars, or from $5 to $20 per acre. *Labette:* The value of lands increasing slowly. In 1860 this county was the hunting-ground of the red man, (Osage;) there was not a white man in the county at that date. The average price of land at the present time is $13.25. *Johnson:* Farm-lands have decreased in value during the last two years, but 100 per cent. higher than in 1860. *Cherokee:* Farm-land is increasing very slowly in value. All the land in the county is held by a railroad company at from $6 to $15 per acre; the price is far above its value or what the people can afford to pay. *Woodson:* Farm-lands are increasing in value. A farm of 160 acres I purchased in 1860 for $300, I was offered $3,500 for and refused. I give this as a fair average. *Lincoln:* This portion of the State was not settled until 1867. Farming lands range from $1.25 to $20 per acre. *Franklin:* During the war there were few sales of land, and no improvements; after the war closed, for a few years, improved farms sold as high as $20 to $25 per acre; at this time the same would not bring over $15. The new lands on our southern border and west of us have drawn emigrants away from the older-settled portion of the State. *Nemaha:* Since 1860, improved farms have increased in value 300 per cent., where they are within five or six miles of the railroad. Farther back they have increased 150 per cent. *Republic:* Lands are now increasing in value because they are now about all settled; the average of farms would be about $5 per acre. In 1860 there were only about a dozen families in the county, and they staid at the risk of their scalps, and lived on buffalo-meat. *Cowley:* Lands are advancing in value; they belonged to the Indians and buffalo in 1860.

NEBRASKA.—*Pawnee:* In 1860 nearly all the land here belonged to the Government; now it is all either occupied by the settlers or owned by speculators; and is worth from $5 to $25 per acre, according to location. *Gage:* Wild prairie-land is worth from $8 to $10 per acre; improved farms, from $18 to $20. *Thayer:* Increasing in value. Average price, $10 in 1860; but few white people were in this county at that time. *Cedar:* Price of land increasing.

OREGON.—*Clackamas:* The inflation in the price of farm-lands caused by the introduction of railroads a few years ago has somewhat subsided, yet good land, well located, commands a good price. *Douglas:* The price of farm-lands is stationary at present. *Union:* Land has increased from nothing to from $2 to $10 per acre. *Linn:* Farm-lands are slowly appreciating in value. Our average farm-lands were worth in 1860 $8 per acre; at present, $20.

CALIFORNIA.—*Amador:* Slightly on the increase at present, but hardly as high as in 1860. In 1860 the placer mines were not exhausted; as the placers were worked out and abandoned, prices of farm-produce went down. The development of quartz, copper, and coal mines has caused a revival of business. *Contra Costa:* Near centers of trade and convenient to transportation, arable lands worth, in 1860, $2 to $10 per acre, cannot now be bought for less than $10 to $100. *San Diego:* In 1860 the value of lands was about 30 cents per acre; but about four years ago ranch-lands took a rise, and went up to about $4 per acre. *San Bernardino:* In 1860 I and others sold lands for

$4 and $5 per acre; a short time since I sold the same quality of land, contiguous, for $20 per acre. *Lake:* Lands are increasing in value at about 25 per cent. per annum, and have been for several years. Illustration: I bought the farm on which I now live, in 1860, for $125; it is now worth $4,000. *Alameda:* All farming lands have advanced from $1.25 per acre and upwards a few years ago, according to quality and location; and now many of these lands are held at prices ranging from $25 per acre to $150, and will pay interest at those figures.

COLORADO.—*Huerfano:* We have no value attached to our lands; the way is still clear for those desiring farms to take up claims. There are claims on the Huerfano, Cucharas, and Apishpa that could not be bought for $50 per acre. *Larimer:* Farm-lands are increasing rapidly in value. No comparison can be made with 1860, as at that time there were no white settlers in this county. I think it safe to say that it has doubled in last four years. *El Paso:* Farm-lands are increasing in value. Good farm property has advanced 200 to 300 per cent. in the three years past.

UTAH.—*Morgan:* The price of land has gradually increased. Meadow-land is valued at $50 per acre, tillable land at $25 per acre.

DAKOTA.—*Union:* Farm-lands are rapidly increasing in value. In 1860 there were but few settlers in this county. Farms that were taken under the pre-emption and homestead laws six or eight years ago are worth from $1,000 to $6,000.

DISCOURAGEMENTS AND THEIR REMEDIES.

The farmer is sometimes credited with a disposition to view too continuously the clouded aspects of his business. While seed-time and harvest fail not, and honest labor makes sure of some reward, the extent of that reward must vary somewhat according to the vicissitudes of the season, the skill and assiduity of the producer, the wants of the consumer, and the unhallowed combinations of greed and knavery to filch from toil a large measure of its slow accumulation. The farmer lives in isolation, but not in idleness; the non-producer of Ishmaelitish instincts, standing outside of the real necessities of legitimate exchange and transfer, with wits sharpened by hungering for the bread of others, marks the producer for his prey; and it is no disparagement to the one, in the midst of his unsuspecting and toilful pre-occupation, that he loses frequently by the consummate arts of the other. Scarcely any other result is possible when the Ishmaelite is a wealthy and far-reaching combination, perverting a beneficent vocation into a scheme of plunder.

The farmer's business is rarely if ever one of excessive profits; yet it is safe, healthful, respectable, and, with the employment of an equal measure of tact and perseverance, is surer than most others to lead to a satisfactory competence. In the present era of speculation, when agricultural colleges educate farmers' sons for the stock-market rather than stock-growing, and agricultural fairs tend more to the advantage of "the turf" than the soil, it is not strange that some discontent among farmers should arise at the slowness of their pace in the journey of accumulation. While it is perfectly safe to assert, and an easy task to prove, that the past ten years have constituted a period of average prosperity, (except as to the direct losses of the late war in the theater of its operations,) with which no similar period in our history can compare, it is true, as the annual records of prices have shown, that for several years past farm values have been receding slowly from the high point attained soon after the close of the war; and also true that wide fluctuation in price, still more discouraging in its influence, has resulted from a failure to keep the proper balance in variety of production. There is a feeling of discontent that naturally arises from a comparison with those times of high prices, apparently prosperous, though delusive, as all periods of temporary prosperity must be, as expressed by the correspondent of Crawford County, Pennsylvania: "Farmers can neither make as much money, nor so easily, as during inflation of currency."

The responses to the March circular, relative to causes of discouragement, afford no indication of permanent hardship or remediless disadvantage. Indeed, the more serious of the evils complained of may and should be overborne as a direct result of effort that never would be put forth but for the weight to which the burdens have attained and the co-operation secured by a public complaint of them. The leading difficulty in the West, and a prominent one in all sections, is the burden of railroad transportation, which eats up the bulk of the farmer's heavy products, unless he wisely insures their being eaten instead by the animals of the farm, for he has his choice, to fatten beeves or bondholders. This burden is more irritating from the fact that the shipper in many cases pays more for carrying a bushel of corn a short distance than for a longer one on the same road. In the South the great trouble is with its labor; not its relative costliness so much as its unreliability, nor its inherent insufficiency so much as its instability, while in other sections there is a general complaint of its high cost in comparison with the prices of its fruits. The other causes of discouragement complained of are numerous, and among them are low prices of most farm-products, high rates for merchandise, and increase of cost of agricultural implements; poor crops, resulting from drought, from lack of drainage, want of irrigation, and deterioration of soil; ravages of grasshoppers, the cotton-caterpillar, the Colorado beetle, the chinch-bug, the hop-louse, and many other insects; the depredations of dogs, plunder by vagrants, and the increase of Canada thistles; the cost of fences, the scarcity of fence-materials, and the attempt to cultivate too much land; extravagance, a spirit of speculation, and discontent with the business of farming; poverty, laziness, misdirected effort, and slovenly practices; want of transportation facilities, lack of a home market, and need of manufactures; a habit of buying on credit, unnecessary expenditure, and inability to hold products for higher prices; the combinations of "middlemen," including the grain-ring, the flax-ring, the implement-seller, the commission-merchant, and the huckster; the extension and re-issue of patents which have paid handsome dividends; and, among other things, venality, corruption, and unworthiness of corporation and government officials. There is also a great deal of complaint of taxation in all parts of the country, and especially in the South, where it is generally coupled with denunciations of the local government—a complaint of paralysis of agricultural energy, caused (as expressed by our correspondent at Gadsden, Florida) by "a government of irresponsible and reckless strangers, who have gained the confidence of the ignorant class to oppress the farmers of the State."

A small minority of the reports declare that no cause for discouragement exists. They are scattered through the country, more frequently in Pennsylvania, where prosperity of manufactures and mining have given great encouragement to agriculture; in New York, Michigan, Indiana, Texas, and California. In Westchester, New York, the only depression is said to arise from the fact that "those who want to sell cannot get ten times as much as their farms are worth." Columbia, New York, is another happy county, where the farmer, while getting only 18 to 25 bushels of rye per acre, is enabled to obtain $20 per ton for the straw, through the influence of manufactures; and in Livingston "the farmer is independent, his condition needing no improvement." Defiance, Ohio, defies misfortune, and "increases in wealth and population faster than ever;" and Williams claims that "prospects are fairer than ever." No discouragement stalks in Kanawha, West

Virginia, "except from grain-raising." There is no discontent in Jackson, Michigan, "as prices are good for wheat and wool, for hay and horses," which are some of the staples of that State. The people of Sibley, Minnesota, are encouraged in the belief that "there is no better county to settle in." In the cotton region there are some counties which have no complaint to present; yet some (*e. g.*, Butler, Alabama) express the belief that greater variety, instead of all cotton, would be safer and better. In Cambria, Pennsylvania, the seat of extensive iron and steel works, no cause of dissatisfaction appears, notwithstanding the prosperity of the iron manufacture; but improvements and progress are rife. Agriculture "was for many years much neglected in this county, and is yet far from what it ought to be, but has recently received a great impetus, and is making good progress; good stock has been introduced, and fertilizers sought after." The farmers of Jennings, Indiana, acknowledge having too much corn in the past two years, overtaxing their cities for shipping and reducing prices; otherwise their condition is prosperous. The people of Tooele, Utah, contentedly declare "water is plentiful and the soil fertile; we average the best crops in the United States, and receive the highest prices."

A cause of discouragement, unnecessary though practically real, which is found in all sections of the country, is thus hinted at by the correspondent for Macon, Georgia: "The universal desire to realize the largest possible present income, and willingness to sacrifice permanent improvement to that attainment." Judicious tree-planting, proved to be a remunerative investment, is one of the last to be made, because an income cannot be derived from it the first year; and there is even neglect of stock-growing, because of returns from a similar reason. Cultivation that admits of two or three crops per annum is therefore popular. Draining is neglected, because its returns come in annual installments, however large these repayments prove. All permanent improvement, in the nature of an investment, is deferred to the distant future. Impatience is the bane of American husbandry; and haste and superficiality are attendant evils, subversive of production and profit. It is to be hoped that this state of things, incident to the settlement of a new country, is temporary, induced by the prodigality of our natural resources and the paucity of personal resources, and that the future will provide a speedy remedy.

There *may be* an excuse for reckless depletion of the soil. If not, whole communities of pioneers are destitute of common sagacity and practical sense. The settler goes to the western prairies without capital, other than a fair share of brain and muscle. His bare acres cost him the fees of the land-office, and each acre may be worth to him and his heirs the annual interest of $100. Having no other resource, he takes (in repeated exhaustive crops) a slice for fencing, another for farm buildings, and still more for the clothing and education of his children. Land to him is capital, and his business a speculation, rather than farming; his farm a gold mine, to be had for the finding: shall he live in penury lest his digging shall exhaust the vein? Besides, he finds little decrease of yield in repeated croppings, and actually deems fertility inexhaustible. When prices appreciate, population increases, and the ordinary conditions prevail, he must change his course, adopt restorative cropping and improved methods, or he will have to contend with deterioration and loss. The correspondent for Cherokee, Kansas, puts the matter in this light: "Rich prairie is a national bank, whence men borrow the funds for the support of themselves and fami-

lies, and the education of their children; and a man is very foolish to leave his children ignorant and his wife without comforts, and spend his profits in trying to better a quarter-section of land which, with good cultivation, will make him rich, as surely as anything he can do."

Many peculiar causes of discouragement are mentioned. Among others the cost of fences and the losses by unrestrained cattle are of frequent mention in nearly all parts of the country; but the evil is most severely felt in Texas and California. The following are sample extracts:

Franklin, Mo.—Another want sadly felt among thinking farmers is a good, efficient stock-law enforced. The scrubs would be got rid of, good stock only would be kept, and a good price could be got for it in market. As an example, I will add that two weeks ago I saw sold at a Saint Louis stock-yard two milch-cows at $7.50 each, that ought to have brought the farmer $30 each.

Refugio, Tex.—The great incubus that has for years been a moral and pecuniary pestilence to the State of Texas is the system of turning stock loose to roam at will; but we are not without hope that our present legislature, now in session, will relieve us of this evil. Then, with improved implements for which our country is so well adapted, we will show a satisfactory record. Take away the necessity of a fence to make a crop and we will furnish you meat of the finest quality, instead of the millions of hides from famished animals.

Another evil operating against the stock interest is bitterly complained of in all parts of the South.

Wilcox, Ala.—I believe there is more money's worth burned in the fall and spring in my vicinity in the shape of dry grass and fences than there is of cotton sold, and that is all we do sell. But if sheep, hogs, and cattle are raised, the loss from stealing is so great as to discourage and disgust. One of my neighbors turned out last spring into a swamp pasture about sixty shoats. There has been no disease among his hogs, and he will have to buy meat to supply a family of five persons.

The farmers in some portions of California suffer from another form of injustice:

Tuolumne, Cal.—Lands segregated as agricultural by the United States surveyor, where there is no profitable placer-mining, where there is scarcely a mine that pays half daily wages, where the mines have been exhausted and the land filled up and reclaimed at great expense by the farmers, have been withdrawn as agricultural and declared mineral. The burden of proving their non-mineral character being thrown upon the farmers, and the cost of obtaining titles doubled, worthless miners are enabled, by filing mineral affidavits, to blackmail them or force them to expensive trials. A common man cannot obtain a title without employing a lawyer, and his fees, the fees in the land-office, publications, citations, travel of himself and two or more witnesses from forty to one hundred miles to the land-office, will amount to as much, and often a great deal more than the amount paid the Government for the land. Where there is a contest, in nine cases out of ten the farmer had better abandon his land than go to the expense of a trial. The county officers, elected by the miners, have seldom a permanent interest in the county; have been paid enormous salaries; have squandered money, and every mining county is hopelessly in debt. The rate of taxation in this county has been for years nearly 5 per cent. This year it has been somewhat reduced. As the miners, with but few exceptions, pay no taxes, the burden of taxation falls upon the farmers. The internal-revenue taxes have also been very heavy upon the wine-growers. The remedy is for the Government to recognize the fact that placer-mining is exhausted; that it is now a curse instead of a benefit; that it does not enrich, but impoverishes the miner, and is desolating and destroying the counties where it is carried on.

Complaint is made that the tendency is strong among farmers to divert a part of their time and means to other business, sometimes to invest the profits of the farm in railroads that pay no dividends to original stockholders, when the farm is suffering for drainage investment that would pay 20 per cent. Some are making investments in building up towns and villages, and neglecting the improvement of the farms which gave them their surplus. An urgent protest against this tendency comes from Baltimore County, Maryland.

The want of attention to forestry in the prairie region is lamented by several correspondents.

Brown, Minn.—Another drawback against a rapid development of our county is the scarcity of timber. Thinking men are of the opinion that Congress should pass a law that no homesteader should get a patent of his land before he has given satisfactory evidence that he has planted five or ten acres in timber.

LABOR DIFFICULTIES.

Six years ago an investigation of the rate of wages of farm-laborers was made by the statistician of this Department, and three years later another, which showed a slight decline by no means comparing with the decrease of prices of farm products. It was shown in December, 1866, that the average value of farm labor, white and black, skilled and unskilled, was about $26 per month, without board; when board was furnished in addition, $15.50, leaving $10.50 as the average for board.

The average wages per annum for white laborers, including all grades of service, was at the same time $336, while the estimate average for English farm-laborers was $182, including the value of all extras and allowances. Thirty-three years ago the pay of farm-laborers was estimated by Mr. H. C. Carey at $9 per month for board.

In December, 1869, the average rate of wages for all farm-laborers, as estimated by the returns, was $25.13; with board, $15.88. The allowance for board was less than in the former investigation, being $9.25 instead of $10.50. Prices had declined, and wages without board were a little lower, while the rate with board was actually higher. The following is a comparison of averages of the different sections at the two periods:

	December, 1866.	December, 1869.
Eastern States	$33 30	$32 03
Middle States	30 07	29 15
Western States	28 91	27 01
Southern States	16 00	16 81
California	45 71	46 38

In a review of this subject in the report of January, 1870, it was said:

In many branches of farm-cultivation the cost of labor seems disproportionate to the cash value of its product, and the remuneration of the employed better than that of the employer.

At the present time labor continues high. It is high because scarce, from withdrawal to fill the requirements of manufacturing and mining industry, the demands of traffic and speculation. Because thus drained of skill and energy, its standard of efficiency is lowered. The responses to the March circular are full of labor complaints from all sections.

Scarcity is general, though perhaps more frequently and strongly urged in the Eastern and Middle States. In the South scarcity comes not alone from paucity of numbers in proportion to work to be done, but from indisposition to do it. There is a strong feeling among farmers against legislation limiting the hours of a day's labor as impracticable and injurious to employer and employed. In the more populous States a native farm-laborer is a rarity. As in Washington, New York, "there is scarcely a native or skilled laborer to be had; all looking

higher." Enterprising young men who propose to engage in farming, generally go West to "grow up with the country."

The few laborers attainable are mostly foreigners, and many farmers limit their operations to avoid the necessity of their employment, preferring to live quietly, and scarcely daring to assume the expense of hired labor. Our correspondent for Chemung, New York, suggests, as a remedial measure, the giving of "help" an interest in the crops in addition to wages. There are many who meet the difficulty quite philosophically. The Jefferson, New York, correspondent says, "Let us rather pay high wages than high taxes for the support of the poor. There are so many labor-saving machines now in the reach of the farmer that if he and those of his family who are able to work take hold in an earnest and judicious way, he may get along with much less hired help than he could in the good old time when all the work had to be done by hand."

It is by no means a misfortune to the country that wages are high in proportion to the cost of the necessaries of life. The fact that every farm-laborer may have a spot of land to call his own is the crowning glory of our country, and his disposition to claim the boon is the highest evidence of his intelligence and patriotism. The following extracts are in point:

Monroe, N. Y.—Any man of energy and capability can and will get a piece of land of his own, and, by raising vegetables and other crops that require but little land and much labor, can do as well or better than the average farmer, and be more independent, profitably combining the labor of his family with his own. This is an excellent thing for our country, but inconvenient for the farmers who have to employ hired labor.

Darlington, S. C.—The labor question does not affect small farmers whose families do the principal work. This class is making more money and succeeding better than any other, and better than they ever did before.

The following extracts, from many of similar tenor that might be made, illustrate further the difficulty in obtaining desired supplies of labor and the resulting cost when obtained:

Delaware, Pa.—A few are securing Swedish laborers through an association in Wilmington, Delaware. By paying a sum of money in advance, say $50 or $60, they are furnished by the association with a newly arrived Swede, whose pay is to be $10 to $12 per month, for one year. About 75 per cent. of the sum is paid in advance, to be deducted from his or her wages; women's wages, of course, being less than men's.

Gloucester, Va.—Farmers have too much land; pay taxes on dead capital, and cannot procure steady, reliable labor. Our best and ablest laborers are employed in oystering, wood-chopping, and lumbering.

Nansemond, Va.—The remedy naturally suggesting itself is to increase the products from every acre, so as to render it profitable and possible for the farmer to pay higher wages. To divide the land into smaller farms, adopt the English system of long leases, establish manufactures of all kinds for home products and all implements used on the farm. Thus will come home markets and population. At present, at least one-third of the gross proceeds of all the farmer sends to a distant market is lost to him from expense of packing, freights, and commissions.

Botetourt, Va.—Farmers have too much land. We have thousands of broad acres of as fine land as there is in the world, uncultivated for the want of proper energy and sufficient labor. Of course we shall complain of hard times until such land is sold or properly cultivated. Another cause I must mention—*our own people have not learned how to work.*

Rappahannock, Va.—The close of the war left the farmer with his land in bad condition, no stock on it of value, no money, and perhaps in debt. Labor since has been inadequate, and almost worthless, and getting worse every year. The best laborers go to Washington City. Taxes are necessarily high. All of which operate as causes of discouragement, combined with the scanty products of soil from poor cultivation, rendered so from scarcity of labor.

Nelson, Va.—The most industrious and reliable among the freedmen seek employment on our railroads and other public works, where they can get better wages than farmers can afford to pay. This leaves the indolent, improvident, and thievish, with the women and children, among us to get their living by pilfering or otherwise, as best

they may. This disorganized condition of our labor I regard as more discouraging than any other. At the same time there is no disguising the fact that our white labor is far from being what it ought to be. A very large number of this class of persons formerly owned slaves themselves, or are the sons of former slave-owners, and do not take to work with an *appetite* for it. When they get to work they watch the slowly wheeling sun, and, with a yawn, often wish that "night or nigger would come."

Matthews, Va.—Chief causes of discouragement are impoverished condition of lands, want of capital to resuscitate, and uncertainty of labor. The remedy that would naturally suggest itself would be to sell off a part and improve the remainder; but purchasers are scarce. Oyster-planting absorbs all the floating capital and labor, and will keep the lands poor as long as it will afford the means of living to the laboring classes.

Pitt, N. C.—The first great cause of discouragement to farmers here is the annual exodus of the able-bodied freedmen to the States south, to engage in turpentine-making. Many of these never return, finding homes there or on going further south. They are enticed by the high prices, $20 to $25 per month, a sum much greater than cotton-producers can afford to pay. Large numbers have left us this year for that business. There is a great complaint of scarcity of labor, and we have the old story of freedmen being bad laborers. While this is in some measure true, and many farmers say they get worse every year, we are getting used to it, so that good labor would astonish us. This labor being our only dependence, and the supply so far short of the demand, there is not one-tenth the labor in this county that is required.

Cumberland, N. C.—Four-fifths of our land is covered with native pines. The turpentine business absorbs all the first and nearly all the second rate hands, leaving only third-rates for the farmers, for which he is compelled to pay the most exorbitant wages. Able-bodied men get from $18 to $26 per month and board, to work turpentine; the farmer cannot afford to pay more than $12 per month. He can only get women and boys, and pays for them $8 to $12 and board per month. Even with these he might get along if there was any law to make them abide by their contracts; but there is none.

Hardin, Tenn.—I can suggest no remedy for unreliable farm labor, except that the land-owners sell out their large farms, in small quantities, to men who will cultivate them by their own labor.

Coshocton, Ohio.—The greatest cause of discouragement existing among farmers is scarcity of laborers, both male and female. We have imported several families from England and Ireland by advancing payment of their passage. A large majority of these labored faithfully and fulfilled their contracts, but some, after their safe arrival here, left us for parts unknown.

Medina, Ohio.—Scarcity and high price of labor are discouraging to farmers, and for that they are greatly to blame themselves. Take this township (Hinckley) as an example: In 1850 we numbered 1,416; in 1860, 1,227; in 1870, 972 inhabitants. Cows and sheep have displaced men. Farm has been added to farm, till the owner can hardly manage them. In summer competition is great to procure men to cut hay and grain. In winter there is little to do; one man can throw fodder to a great many cattle and sheep; hence our young men go off and find employment on railroads or in the cities, and once off, seldom return to live at home again. What is true of Hinckley is true of the county. The remedy is for farmers to be content with smaller farms, and try to make them rich and productive.

Clinton, Mich.—I paid last fall one-fourth the value of my corn in cash for husking, and did not get it finished at that.

There is much competition for foreign immigration. The tide has hitherto gone westward, seeking free homesteads. As eligible western lands become scarcer, the tendency to look southward is becoming stronger, and a heavy immigration promises ere long to set in that direction. It is greatly desired by intelligent men in all of the Southern States. There is an impression, on the part of many land-holders of that region, that something like the European tenant-system will ultimately prevail, by which they may retain their extensive estates and become enriched by the labor of others, an idea that has already been a bar to immigration. The foreign laborer of any value is prompt to seek land of his own, and will not be long content to labor for wages or even a share of the crop. A correspondent in Florida (Columbia) complains that immigrants claim a homestead and reside upon it, and "are consequently of little benefit to the farmers." A more practical idea comes from Hale, Alabama. "We need immigration, white men of sufficient

means to buy small farms and stock them without incurring debt." It is proposed in Stafford, Virginia, to induce immigration "by giving homesteads to immigrants, and selling in small portions on long time." In Charlotte, Virginia, "farmers from Europe are wanted to work on shares of crop for a series of years until they are able to buy small farms." The following extracts relate to inducements held out to settlers, either from other parts of the country or from Europe, by several of the Southern States:

Warren, N. C.—The principal cause of discouragement with our farmers immediately after the war was the disorganization of our labor system and want of capital. These causes are gradually disappearing, and we are more hopeful of the future. We have a healthy climate, pure water, and a good soil. Our population is refined, educated, and intelligent. What we need are capital and immigration. We want men with money, character, and energy, to buy up our surplus lands and go to work with us, and we have no doubt of a prosperous future. Our county was wealthy before the war, owning a large number of slaves; consequently we have plenty of labor. Laborers are beginning to work better and take less interest in politics than heretofore, and we think will continue to improve. A northern man can come here and buy 100 acres of land for $1,000; produce everything he needs for home consumption, and make profitable market crops, have mild winters, with very little time that he cannot do out-door work, enjoy good health, go to church on Sunday, and send his children to school during the week.

Kauffman, Texas.—Farmers here, by proper management, can succeed better than in almost any other portion of the United States, for this reason, that it takes less capital to manage a farm. Land can always be bought at fair rates, on terms suitable to a man's means. There is a disposition shown to help every new-comer along, and aid him with farming utensils.

Williamson, Texas.—The State is fast settling up with a better class of immigrants, and lands have advanced more in the last year than for the ten previous ones.

Fayette, Tenn.—The want is good reliable labor. The Department of Agriculture and National Government ought to aid us materially by authoritatively stating to the public that personal rights are as safe here as elsewhere.

Prince William, Va.—Old farms here are too large; should be cut up into small farms. We have room for one thousand additional farmers in this small county. So say to all, come to our genial climate, where you can make pleasant homes for yourselves and families; where most every necessary of life can be produced by skillful hands. This will help us the most.

King and Queen, Va.—The aid of capitalists and immigration of industrious laborers would aid very materially to develop our resources. We have a genial clime, and are accessible to the Richmond, Norfolk, Baltimore, Philadelphia, and New York markets in from six to twenty-four hours.

Marlborough, S. C.—This is certainly a much better country for those who wish to leave their old homes than any portion of the Northwest. Capital invested in planting pays as well with us as it could in any regular business. We need skilled mechanics and industrious laborers everywhere. We purchase largely of improved implements, particularly plows, all of which come from the North or West. We have every facility for manufacturing these articles, except skilled labor and the disposition to go into manufacturing. One county is improving, and our white people are all at work, most of them successfully.

Conecuh, Ala.—Form a club, each member to pay so much for printing; send circulars descriptive of soil, climate, products, fruits, &c., over the West and Europe, and let every farmer who has over one hundred acres of land give every alternate forty acres of land to every actual settler. We have thousands of acres of land in this county that could be given away, and the people, or rather the present owners, would be better off by doing so, and as Com. Maury has said that every actual settler is worth one thousand dollars to State and county, we would soon be able to pay taxes, cultivate all the waste lands, produce three times more than we could consume, pay debts, and save money.

Cherokee, Texas.—Our farmers have no cause of discouragement; on the contrary, they have much to be thankful for. A healthy country, rich land, good society, schools and churches in nearly every settlement. Many buy farms and make from 50 to 25 per cent. of the first cost a year, from the crops grown thereon, besides supporting their families. I have known farmers to buy farms for $800, and make a thousand dollars' worth of cotton the first year, beside plenty of corn, potatoes, melons, and garden vegetables. As a general rule the farmers of Texas are very liberal to emigrants; will sell lands on one, two, or three years' time, and furnish stock, tools, and provisions for the first year on credit.

Perry, Tenn.—Our farmers, as also other classes, are contented and happy, and, the

amount of capital, &c., being equal, make as much money as the same number of farmers, perhaps, of any county of the Union. Yet four-fifths of our lands are yet covered by primeval forests, and is exceedingly low-priced, while improved, *i. e.*, cleared and fenced, lands are very high, which disproportion in price is caused by the want of labor, and a disposition on the part of politicians to represent us as averse to immigration, and our society unprotected by laws.

Hopkins, Kentucky.—The great want with us is steady, reliable labor. One thousand sturdy German farmers would probably do this county more good than millions of money. We have all the elements of immense wealth, in the shape of coal of the best quality, and first-rate timber in great abundance.

LABOR AT THE SOUTH.

The labor problem at the South has long been a difficult one. It was foreseen that neither employers nor employés could adjust themselves gracefully to an instant change from involuntary servitude to free labor. In the constitution of human nature, with its habitudes and prejudices, it could not be otherwise. Our correspondence is full of references to the relations of labor, of the most direct and positive character, and a proper understanding of the status of labor there requires large license in the extracts, which are given as the views of individual reporters.

The instability of negro labor appears to be the prevalent complaint. Cotton is a most exacting crop, which requires at least ten months for growth and harvesting, while the other two are needed for preparation; and the negro is charged with breaking his contract in the midst of the season, for higher wages, for a period of leisure, or from the merest caprice that seizes him—in some instances making engagements with several persons and disappointing all. The following extracts bear upon the point:

Southampton, Va.—The negro in a state of freedom has little or no care for the future, and is satisfied with a bare supply for his daily wants. The foreigner will not come here to work with the negro, and hence a large proportion of our arable land must remain untilled. The negro is gradually gravitating to a warmer clime, (the work of time,) and in this state of transition the question is, "What will the landholder do?"—he can neither cultivate nor sell his land. This question is now puzzling the wisest heads, and our condition is becoming one of suffering rather than of enjoyment and profit.

Campbell, Va.—The most discouraging thing to the farmers in this county is the bad system of labor. The negroes are anxious to work by the day, but as soon as they get a little money they stop work until that is spent. If the farmers would co-operate in not employing them except by the month or year the system could be greatly improved.

Floyd, Ga.—The shiftless and uncertain negro has to be employed, but he is a great vexation. It seems impossible to arouse or excite him to a constant diligence or to adapt him to a modern system of farming. He is careless and inconsiderate, and has no ambition but for temporary ease and comfort, and will never become an educated laborer. If he has any talent or ambition he quits the farm and goes to town. It is only the indolent and indifferent that stay on the plantations.

Stewart, Ga.—A laborer on a farm now works no more, upon an average, than six or seven hours each day, and the wages paid are too much. Most of our farmers ruin their farms by renting lands to freedmen, and furnish them with stock and supplies of all kinds. The stock is generally badly treated, and the crop badly worked.

Bolivar, Miss.—Laborers seem to be the great cause of discouragement among our farmers. They are very unreliable; will only work for a portion of the crop, and seem to become indifferent before half the cultivating season is over, and generally neglect their crops and make nothing for themselves or the land-owner. It is impossible to convince one of them of any advantage in improved implements.

Franklin, Ga.—But few laborers have either property or credit, hence the employer has everything to furnish, anticipating payment from the proceeds of the growing crop. Most laborers are disposed to be both idle and wasteful; they soon become indebted to their employers, their demands for advances are extravagant, labor is scarce, and the employers are compelled to comply with their demands or lose their labor and the amount already advanced; hence, at the end of the year, employers are frequently losers.

Richland, La.—Most planters give their laborers a certain proportion—usualy one-half—of all that is raised on their lands, the planter finding the farming implements, mules, and feed for the same. This plan is now believed to be detrimental to the interests of the planter. Some few rent or lease the land at $4 to $6 per acre, and think they do better. Fewer still pay their laborers a certain stipulated amount of money per month. Very few hands in this county are willing to work under this arrangement.

Little River, Ark.—To make a synopsis of the laborer's mal-conditions: He has to buy his meat at 25 to 30 cents per pound; his bread for $1.50 per bushel; his drink (not water) for $1.50 per bottle; and his clothing from 100 to 200 per cent. on cost, besides interest and other emoluments to the merchant or employer for having to wait from January 1 to the time when his cotton can be gotten to market. The result is, that, at the end of the year, he has nothing, though with intelligence and care he and his family might have cleared about a thousand dollars above the cost of his absolute necessities.

Hamilton, Tenn.—The farmer makes his contract with his farm-hands, the freedmen, for the year, and agrees to pay them so much for the year in monthly payments. He "pitches" his crop—so much corn, oats, wheat, grass, &c.—for the force he has employed; they all start off in a good humor, and everything moves pleasantly until the winter months have passed, and the "spring-time has come," and the time and labor of the farm-hand is constantly required. The farmer is using every exertion to have his grain crop ready, so that he can go to his clover and grass meadows, his oats and wheat harvest, and "make hay while the sun shines," when he finds that, from some cause or other, and generally the most trivial, the freedmen have become dissatisfied, demand their time and wages, and leave the farmer to save his crops as best he can, which is difficult to do, as the demand for labor at this time is great; and if he gets other laborers it is at greatly increased wages. Sometimes the demand for wages is greater than the value of the crops to be saved.

There is another difficulty, less dwelt upon, but almost equally injurious: the inefficiency of white labor, and an indisposition on the part of many whites destitute of income to do any regular work. The following extracts illustrate this difficulty:

Johnson, Ga.—Want of energy is the principal cause of discouragement. The young whites, who were not brought up to labor on the farm, find it hard to commence that occupation, and too many of them seek the professions, and other occupations, rather than work on the farm. The colored population believed that freedom and idleness are synonymous terms. Hence, when they became free they thought they had nothing to do but lie abed until the Government furnished them with forty acres and a mule.

Coahoma, Miss.—This is our remedy: we want white labor, improved labor, so as to set an example to the colored people of superior industry and energy; laborers who can use improved agricultural implements, and know how to take care of them; who have a sense of carefulness, honesty, and attention to business—the common requirements of farm labor. Every planter should have them on his place, and should be prepared to accommodate them.

Jasper, Miss.—The white people do not want to work, and they say the negroes will not work; hence the many complaints. The only remedy that fairly presents itself, or any suggestion that I can make, is for both white and colored to take up some business or industry, and follow it instead of finding fault.

Many correspondents ask for a law compelling fulfillment of contracts, and defining the duties, rights, and privileges of landlord and tenant. There certainly should be legislation securing equal justice to employer and laborer, if it is not already upon the statute-books of States. It is evident, however, that there are unprincipled employers who stimulate and turn to their own advantage this disposition to disregard contracts.

Tensas, La.—With land cheap and cotton bringing a good price, the man who can command the most labor, either by hoodwinking, humbugging, or persuasion, makes the most money. At the beginning of each year most of the labor is unengaged, and the contest for hands is very exciting. A month or two is generally lost in this way, and hard feeling very often engendered between neighbors.

Nicholas, Ky.—I would suggest that farmers enter into an agreement not to hire or give employment to hands who had, without good cause, left the employment of another, without first consulting both parties and learning the cause of separation.

There are employers in every State in which colored labor is predominant who have the wisdom and tact to adapt themselves to the changed conditions of labor, who supervise or direct personally the operations of the plantation; and they succeed admirably, while the majority of their neighbors fail to secure efficient service and its highest profit—in instances like the following:

Pasquotank, N. C.—No cause of complaint exists among our people. On the contrary, our future looks bright. The best understanding exists between land-owners, laborers, and tenants. The laws are seldom violated. We have but little use for jails or poor-houses; and peace, order, and quiet prevail.

Madison, Ga.—Where farmers are practical men, giving their farms personal attention, no cause exists for complaint.

Hall, Ga.—There are no causes of discouragement among our farmers. They are fast learning to adapt themselves to free labor, and labor in turn has learned its place, and both capital and labor are each assuming its proper place. Few southern men knew how to manage free labor; neither did the slave know what freedom was. Many thought that freedom was rest, but they now begin to feel its burdens, and to realize the necessities of a family and the requirements of government. The country is generally rising. Most of farmers are out of debt, some are laying up money, and a general improvement is going on, with a great desire for information in agriculture. The negroes are acting tolerably well, though none of them seem inclined to lay up anything for the future.

Franklin, Ga.—Most of the lands are farmed by freedmen, who do very well if the landlord will stay with them to direct the work; where that is not done it is in most cases a failure. All that is wanted is to be with the hands, and good crops are pretty sure.

Various remedial suggestions are thrown out by correspondents, and, that each class of views may be presented, the following extracts are given:

Lexington, S. C.—The plan of employing good hands on shares of the crop is gaining favor, and must prove to be advantageous to both employer and employé, as the latter is sure to be more diligent and do better work when he has a direct interest in the crop. A want of capital, as well as enlightened self-interest on the part of our farmers, to furnish the farms with the most approved implements of culture, and especially good, heavy plows, and teams to draw them, by which our soil may be turned up ten inches, and security against drought, our *greatest* and *surest* destroyer, is what we most need. With this accomplished, the hills and plains of Carolina will teem with stores of her own hidden wealth.

Marengo, Ala.—To prevent the downward course of the planting interest, I would suggest that the planters should make themselves, in a measure, independent of labor by adopting a system of farming that would require but few laborers. These lands are well adapted to growing clover, Bermuda grass, and various native grasses of value, and stock-raising could be profitably carried on. If our planters will live on their plantations, vary their products, rely more on their own energy and brains than on the reluctant muscle of the freedmen, husband their manurial resources, and make, as far as possible, all they need at home, this section will soon become one of the most fruitful and desirable in the United States, and the lands will regain their former value.

York, Va.—A large surplus of negro population, which consumes more than it produces. If three-fourths of this population could be got rid of, the York peninsula would be a good region for sheep.

Terre Bonne, La.—I am thoroughly satisfied that the only hope for us is the adoption of the tenant system, with white men for tenants. The tenant furnishes his own team, or buys it from the planter on time, furnishes his own supplies and implements, and gets one half of the crops. The arrangement lasts for a term of five years. He has a certain tract of land marked out, which he cultivates as if it were a separate farm, but subject to the control of the planter in the methods of culture. During the sugar-rolling season, all combine in taking off the crops. This division of the business leaves the time and capital of the planter free to be devoted to the improvement of the sugar-house, and the processes of manufacture, while it secures a permanent supply of labor, and a labor paid in proportion to the crop.

Clarke, Ky.—To speak plainly, there will be no reliable labor from the colored people of Kentucky while the pro-slavery democracy are in the ascendant in the State. Now a little on the other side: The number of freedmen is by no means small who seem to think that *freedom* consists in exemption from labor; and the sole delight in their newly acquired liberty is to be idle. Not every colored man is lazy, yet it is undeniably true that, taken as a class, they are not steady workers. There is a very great disposition among them to refuse to enter into contracts to labor for periods of

much length, say by the year; they prefer "job-work." There is a great inclination to work only at certain times of the year, during harvest, hemp-breaking, and corn-cutting. At these times they will demand the most exorbitant prices, in order to spend a large portion of the year in idleness.

Princess Anne, Va.—The great and only remedy for all of our "ills" is immigration. Our large tracts must be divided up into small farms, and these farms cultivated by the owners. The farmers in Princess Anne and Norfolk Counties are growing poorer every year.

Loudoun, Va.—Farmers should adopt some modification of what is known in Europe as the "allotment" system of labor: provide our colored laborers with homes on the farms, and, through their known strong local attachments, fix them to the freeholds. Educate them, increasing their wants and raising them in the scale of being.

Charlotte, Va.—Time alone can settle the labor question. Nor are we prepared to say that the labor of the free blacks will eventually be that to be relied upon or that which will cultivate the lands of Virginia. The indications at present are that it will be set aside, and that white labor and that of the owners of the soil will eventually be the only reliable sort.

These evils can be modified, if not effectually remedied. In the first place, the tenant-share system—the partnership in which the responsibility is all on one side; a business in which one party furnishes all the money and vacates all control in its use, and the other supplies the muscle for the work without brains to direct it—is a confessed failure, verifying the predictions made in the monthly report of January, 1870:

1. It is not a voluntary association from similarity of aims and interests, but an unwilling concession to the freedman's desire to become a proprietor, or an inability to make prompt payments of wages in cash.

2. It is a complicated copartnership, opening the door to fraud on one side and unfaithfulness and desertion on the other.

3. It is not equitable between the freedmen, as it renders impossible a proper discrimination between the industrious and the idle, the dexterous and the incapable.

4. It leaves uncontrolled and almost undirected those who have never been subject to self-management or self-restraint.

5. It almost invariably inspires exaggerated expectations, leads to improvident drafts upon an uncertain future income, and ends in disappointment and discouragement.

6. It debars the proprietor from exercising a control over the plantation and its operations essential to present success, and the permanent improvement of the estate.

As was said then, "the best labor contract is the simplest: stipulated wages for faithful service, which shall be paid promptly, as agreed, in cash, with an equitable portion reserved to the end of the year, both to secure the planter against having his cotton unpicked and to give the freedman a surplus for accumulation or the supply of other than daily wants." If he refuses to work in this way—and the change might be difficult—he should be patiently taught to submit his labor to the direction of higher intelligence. Opposed to the wages plan is his natural desire for independence, which is illustrated by a statement of our Winston (Mississippi) correspondent, that "freedmen are buying up homes of their own, and cannot now be hired to any extent by the white population." If he will not hire for wages, it has been shown that the best form of co-operation is that which enables the employer to control his property, not allowing his provisions to be eaten up in junketing and his forage by horses and mules that do not plow; one in which he directs personally or by a competent manager the operations of the plantation, and advances only the requisite amount of provisions in lieu of board. An equitable share system, in which labor should be wisely directed by friendly co-operation, would avoid the evils of the irresponsible tenant-share system. The principal objection to it—and one which begs the whole question—is that the two parties cannot co-operate, even to this extent. If such is the case, and the incompatibility cannot be overcome, and if then the wages system cannot be accepted, let each go to work on his own account and solve the labor question according to individual preferences and capabilities.

POOR FARMING AND BAD MANAGEMENT.

Among a class so large as that which constitutes the farming interest of this country, including contributions from almost every foreign nationality, there must be much of poverty, ignorance, prejudice, and want of industry and skill; and our returns are necessarily replete with reports of this character. These evils constitute an obstacle in the way of true growth and progressive development as an agricultural nation which are not sufficiently realized. Their existence cannot be concealed, and it is proper that a glimpse of them should be obtained through the following extracts:

Crawford, Ohio.—Farmers here need not be discouraged; everything grown can be sold for cash, at good prices; but many farms are becoming worn out, because so many farmers are so slow in learning that they cannot take good crops from the soil continuously without offering a return. Again, they cannot apparently be taught the value of draining, consequently much land is almost marsh, or too wet, which might be reclaimed by a little underdraining. Systematic rotation of crops they seem to know little of.

Kalamazoo, Mich.—Want of skill and intelligence as to the best method of farming is an evil among a large class of farmers. There is a strange prejudice against any of the suggestions of science or of *book farming*. The "stone-in-the-bag-to-mill" idea of the fathers is adhered to with great obstinacy from generation to generation. Too much land to carry on, and too little help and means to improve it properly, is another sore evil. Many a poor honest farmer is harassed and driven from year's end to year's end, and after toiling through summer's heat and winter's cold, with a burden of cares and anxieties almost insupportable, finds himself at last just able to keep the wolf from the door. The desire of farmers, each to own all the adjoining land to their farms, already too large, and the acquisition of the same as fast as money can be obtained to purchase, has been, in my judgment, one of the many hindrances to thoroughness and success. There are also the evils of the poorer class of farmers being obliged to sell their produce as soon as it is harvested, whether the market is favorable or not, of combinations of "operators" and "middle-men;" the monstrous monopolies of transportation mediums; the ravages of insects; the distemper that wasteth at noonday; the influences of climate; these and many others are mainly exterior, and can be overcome by careful, intelligent co-operation and patient investigation.

Stark, Ind.—Whatever discouragement exists among farmers arises from their own neglect and ignorance. The remedies I would suggest are a thorough agricultural education of boys designed for farmers and a thorough organization of the farmers themselves for discussion of the different methods of culture and co-operation to secure better prices.

Breckenridge, Ky.—It is evident to any thinking man that the causes of discouragement are the old-fogy notions of the first settlers from Virginia, which have been handed down from father and son until it has become the law of the land that any departure from them is a heresy not to be tolerated.

Randolph, W. Va.—Remoteness from market and want of cheap modes of transportation, combined with lack of industry, energy, and enterprise, are the causes of discouragement.

Howard, Md.—Our troubles arise from poor land, poor prices, terribly protracted droughts in successive years, poor roads, poor people, rich politicians, no enterprise, stagnation. We made some splendid beginnings of several agricultural associations, but at the last meeting, held in the rear part of a store, the president sat on a fish-barrel and received motions from the only two members present, one of whom was the writer, and he left. The remedy is in the farmer's hands, but he does not see it, and the consequent burden is grinding him to powder, standing as he does between the upper millstone of anti-combination and the nether one of apathetic ignorance.

Waukesha, Wis.—In relation to discouragements, I think none can be said to exist in Waukesha County, except such as result from stupid, ignorant, or shiftless farming. From 1840 to 1850, prices of farm products were low, markets quickly glutted, and as a rule the work of the farm done by hand. The farmer's life was then one of toil. From 1850 to 1860, some farm-machinery began to appear, and railroads for travel and transportation; but prices ruled low; wheat rusted, and frosts nipped the corn. From 1860 to 1873, seasons with us favorable; no rust; no untimely frosts of consequence; prices good, and sometimes high; market demands quickly take all products from the farm; farm-machinery does the heaviest of farm work, with more perfection than ever before; railroad facilities for marketing farm products everywhere extended. Complaints that labor is scarce and high are heard on every hand, but improved farm-machinery more than compensates that. Formerly, a strong man could possibly mow two

acres from sun to sun; now, a weak man, or an active boy, or even a young lady, with a team, can mow in less time, and do it better, ten to twelve acres; and grain is cut with about the same relative difference in labor. A mixed husbandry is the sure precurser of success with industrious, studious farmers. As an evidence of encouragement, far exceeding all the discouragements which the most complaining can see, we note the fact that now farmers have carriages, carpets, music, many of them fine houses, out of debt, and money for all needed wants.

Reynolds, Mo.—Ready sale can be found, at good prices, for all farm products, but the fact is that not one-twentieth of the farmers more than half cultivate their lands. There is no such a thing in this county as a sub-soil plow. I have told a great many of the value of sub-soiling, but they seem to think that it would ruin their lands.

Nemaha, Kans.—Many of our agricultural societies and their fairs are looked upon as a nuisance by our farmers, such as will offer $20 or more to the fastest horse, and $10 or more to a scrub-race, and $1 or $2 for the best wheat, &c., and yet we all believe that farmers' clubs, fairs, and societies are very beneficial when well conducted.

Dodge, Neb.—Poverty, a want of enterprise, a spirit of speculation, a desire to get rich on the rise of property, instead of by patient industry and economy, facilities for transportation, and the high tariffs of railways are some of our discouragements.

Oldham, Ky.—I would advise our farmers to pull off their coats and go to work; talk less of horses; quit complaining of the Government; dissipate all ideas of what has passed in the last twelve years; stop preparing for the professions every boy of talent; teach children to be both scientific and practical; elect only the best men to all offices; never go in debt for mere show; pay as they go.

Symth, Va.—Our farmers should be taught to plow under more clover, use more gypsum, build barns and stables, to enable them to save the manure; to establish schools to educate the laboring classes; a combination of some kind to lower freights and destroy railroad monopolies; by some sort of legislation to make it for the interest of the large land-owners to sell what they cannot use to advantage themselves.

Burke, N. C.—Want of knowledge in agriculture; the advantage of draining, subsoiling, and manuring is what we need to make this part of North Carolina among the most desirable portions of North America. All fruits and vegetables raised this side of the tropics are grown in abundance; our land is good and cheap, and capable of being raised to the highest state of fertility. Our climate is mild and healthy; chills and fever seldom known, and that disease so fatal of late years in the Northern States, consumption, is hardly known here.

Bosque, Tex.—We need combination; a thorough, systematic preparation of the soil and rotation of crops, organization of agricultural clubs, and more mental and physical labor. We want united effort to develop the great natural resources of our country.

Santa Clara, Cal.—The principal cause of unprofitable farming in this and every county in this State is a total lack of any system in working the soil and a want of practical knowledge on the part of many, and a reckless disregard of scientific principles which should govern the cultivation of the soil; also, a disregard of rotation and variety of crops. Two-thirds of the farmers purchase all the vegetables for table use from peddlers who bring them to their doors; buy most, if not all the ham, bacon, and fresh meat used in the family, and one-third, at least, purchase at the country store their butter and eggs. The large majority purchase their potatoes for winter use, and very many buy the most of their hay and all their grain for feed. Such is farming in California, a country possessed of the richest soil and most salubrious climate in the world, capable of growing almost every variety known in the vegetable kingdom.

Campbell, Tenn.—I would suggest the forming of farmers' clubs, the circulation of good agricultural papers, the building up of good agricultural schools, and the keeping of careful farm accounts, that the farmer may know what he made or lost and what crop pays best.

DEBT AND EXTRAVAGANCE.

The tendency to extravagance in times of high prices, and to the entanglements of the credit system which are so ruinous on the recurrence of "hard times," is bitterly inveighed against, and its consequences portrayed from observation and experience of the harships which involve so many farmers at the present time; and the poverty resulting from war losses is a subject which causes much lamentation.

Spottsylvania, Va.—When the rebellion ceased three-fourths of the farmers were in debt. The slaves being set free, the creditors induced farmers to give them deeds of trust upon their lands, and the farmer, to get a little longer lease for a home for himself and family, consented, for about one-fourth the market value of his lands. If the cred-

itor can find sale for the land to the amount of the mortgage he will sell at once and leave the farmer and his family homeless. This discourages the farmer from making improvements that he would otherwise make, and these old debts will never be settled because there never will be purchasers enough for so much surplus land. If Congress in making a bankrupt law had included deeds of trust or mortgages, as they did executions and judgments, giving the farmer a small homestead, and let the balance go to his creditors, agriculture would then prosper in Virginia. We have a soil easily improved and a climate unsurpassed.

Franklin, Ala.—The Southern farmer will anticipate his crop, that is, he will spend it before he makes it. This almost universal habit is a blight upon all our industry. It affects both white and black, and keeps us all trudging with despondent feet the path of poverty.

Greene, Mo.—Scarcity of money, caused by buying four dollars' worth of goods for every three dollars produced. Money was plenty here during the war, large amounts being paid out for supplies at enormous prices. Then followed a large immigration, which kept the prices of produce up and brought a great deal of money into the county; these sources finally failed. But we had got into bad habits and lived as though there was no end to the supply. The only remedy I can suggest is for people to live within their means; come down to the fact that to have a dollar it must first be earned. That system alone pays in farming, and when we come to that we are all right, having a good country, fine climate, healthy, well watered, rich soil, etc.

Harris, Ga.—Another reason why the farmers do not succeed is because they buy supplies, implements, and fertilizers on a credit and give an exorbitant rate of interest. For example, in July or August a planter wants 1,000 pounds of bacon and 50 bushels of corn; the bacon sells for cash at 11 cents and the corn at $1. He buys on a credit till the 15th of October or 1st of November, and gives 18 cents for bacon and $1.75 for corn, and then gives a lien on the crop and on everything else he has, binding himself to pay all lawyers' fees and the expenses of selling him out. What an enormous percentage for only a few weeks, or months at most; about 300 per cent. per annum. The remedy is to abolish liens, and go on the cash system; do away with middle-men; let every neighborhood have a well-organized society and have an agent of their own to buy and sell, or each one do it for himself.

Our correspondent at Barnwell, South Carolina, says that "where there is a reasonable amount of industry and diligence, though a small proportion of science and skill, the results are satisfactory;" and statements of a similar tenor are frequent from that region. In Pitt, North Carolina, our correspondent expresses the hope that farmers will become independent enough to resist the temptation to cultivate cotton exclusively, and adopt a system of rotation, and secure higher ultimate profits. He says they need examples; that "there is a powerful sight of preaching, but little practice; but the revolution is progressing, and the welcome and restorative system comes apace." In the younger States the curse of pioneer farming prevails. "The farmers are shiftless pioneers, found on all frontiers," says our correspondent for McDowell, Missouri; and this county does not appear to be worse in this respect than many others. "Laziness and unscientific farming" are twin evils in Butler, Kentucky, but they are not found there alone. In Obion, Tennessee, "laziness and ignorance" are the only causes of discouragements in a region where "nature has been kind," providing "a rich soil and salubrious climate." To "ignorance" and want of industry is charged the shiftlessness of many neighborhoods; and the remark of the Orange (Florida) correspondent is repeated with variations in all sections of the country: "The great difficulty is that our farmers as a class are not a reading people, and are prone to follow in the footsteps of their fathers."

There are localities, in different sections of the country, in which the unsystematic and unprofitable methods employed in agriculture are partially realized, and in which aspirations for improvement begin to be felt, while the lethargy produced by comparative poverty prevents any general effort toward amelioration. The following case is an example:

Perry, Ind.—Our farming-lands in this section are completely worn out, our improvements upon them going to decay; our farmers are without resources; diseases

in their worst forms are many and severe, and most of them remain here because they must. We hear from all sides the cry, "The old way of farming will not pay." We must resort to rotation of crops, we must underdrain, use commercial fertilizers, apply green manures, etc. The plans proposed by the scientists, and all the others advocated, take it for granted the farmer is in a condition to make the necessary outlays; but here is the trouble; our farmers are too poor, too helpless, to adopt the proper system of farming. The question arises, then, how is he to be placed in a condition to do it?

SELF-RESPECT IN AGRICULTURISTS.

Many correspondents protest against degrading the character of agricultural exhibitions by offering the principal premiums to jockeys, and demand higher and more practical aims; and one expresses the disgust he feels at the want of self-respect exhibited by agriculturists in the following terms:

York, Me.—The business has fallen into disrepute primarily because farmers consented to be patronized.. When a man accepts a patron, and is guided by his counsels, he so far surrenders his equality and independence. Farmers have allowed jockeys to control agricultural societies; selected ministers and judges to lecture upon practical farming; permitted theorists and charlatans to speak in their name through their press; submitted to detraction and ridicule, sometimes cringingly. Men seeking notoriety, money, or office have crowded to the front, assumed the name while they scorned the burdens of the farmer, deceived some by bluster or sophistry, silenced others by denouncing them as old fogies. The public have mistaken the silence for acquiescence or ignorance, and inferred that farmers, as a class, have sadly degenerated. If the doctors should call a medical convention and give up the business to lawyers or farmers, we should conclude that they thus acknowledged their incompetency.

ENCOURAGING SIGNS.

The evidences of poor farming are by no means new. An encouraging feature of these returns is the indication of an awakening in methodical and scientific agriculture. Incidental references to improvements are numerous and gratifying. The necessity of more attention to the subject of rotation of crops, of greater thoroughness in the preparation and cultivation of the soil, of judicious liberality in outlays for permanent improvement, of more attention to restorative farming by means of the consumption of products by live stock, is acknowledged in all quarters, and beginnings of such improvements are everywhere reported. Among these references are some showing that even tobacco-culture in Virginia, to which the soil-deterioration in that State has always been charged, can be continued with benefit to the soil.

Fluvanna, Va.—I know many interesting cases in tobacco and wheat growing, among farmers whose lands were light and dry, and considered poor, who have regularly made good crops and improved their farms and their condition, while their neighbors, on good lands, were losing money.

Forsyth, Ga.—With a few years' cultivation, the land failed to produce as freely as at first, and farmers were accustomed to clear fresh land every few years, but more recently they are giving more attention to modes of culture, fertilizing and renovating old and worn lands; and by this and deep plowing, the farmer is learning that it is not so much the area worked, as the manner of preparation and cultivation, that remunerates him for his labor.

West Feliciana, La.—Six and a quarter acres of ground were highly manured with green cotton-seed and sowed to spring barley in 1871. In 1872 the ground was plowed and subsoiled in April, 200 pounds soluble Pacific guano per acre being applied in the drill, as deep as possible. Cotton planted May 1, but did not come up till June 1, owing to drought. The usual cultivation was given, and the crop grew rapidly. About the 15th of August the caterpillar appeared, and by the 10th of September not a leaf could be seen, the stalks hanging with bolls in various stages of growth, at least one-half being under half grown. The yield was 3,600 pounds of lint-cotton, which sold for 20 cents. But for the caterpillar the yield would have been at least 4,800 pounds lint.

Russell, Ky.—After having quit farming for twenty years, I returned to my place three years ago. By using the manure from the barn-yard, and by deep and thorough culture, I am raising at least 50 per cent. more grain than was produced before I came to it.

The Cumberland (Virginia) correspondent mentions a notable case of improvement of badly worn, apparently worthless soil. In a twenty-acre field were four acres "perfectly bare, except stunted bunches of hen-grass." On this he spread refuse tobacco-stalks, and in the autumn scattered five bushels of lime per acre, and plowed under, and sowed winter oats, one bushel per acre, harrowing to a fine tilth. In spring, after applying lime in quantity as before, the oats were plowed under, and one month later peas were sown, five pecks to the acre, and again, when the ground was well covered with vines, an application of two bushels of lime and one of salt was made, and the pea-vines turned under. On the 20th of September wheat was sown, five pecks per acre, with one gallon of clover-seed. The result was 60 bushels of wheat, or 15 bushels per acre. The pecuniary result was as follows:

EXPENSES.

Plowing, (50 cents per day for plow)	$8 00	
Harrowing	4 00	
Seed oats, (4 bushels, at 50 cents per bushel)	2 00	
Seed peas, (5 bushels, at $1.50 per bushel)	7 50	
Lime, (48 bushels, at 12½ cents per bushel)	6 00	
Seed wheat, (5 bushels, at $1.50 per bushel)	7 50	
Harvesting crop, (at $1.75 per acre)	7 00	
Thrashing, (at 9 cents per bushel)	5 40	
Six hundred pounds Aber's guano, (150 pounds per acre)	18 00	
		$65 40

RECEIPTS.

Credit by 60 bushels of wheat, at $1.80 per bushel	108 00	
Amount of straw and chaff	12 00	
		120 00
Profit		$54 60

The farmers of the portions of Texas subject to drought are canvassing for a remedy, and a correspondent makes the following suggestions:

Atascosa, Tex.—I have one suggestion to make, *i. e.*, to plow the land in the early fall to the depth of one foot or fifteen inches; subsoiling will still be better. I wish some of our northern neighbors would invent some plow to suit our dry seasons. We have many plows, but none to suit our soil or seasons. We very much desire a plow high in beam, very heavy in moldboard, cast with steel points. Unfortunately our cast plows have been badly furnished with points, and many are laid aside for this want of points.

TRANSPORTATION DIFFICULTIES.

The excitement relative to high and discriminating rates for railway transportation is intense throughout the West, and the subject claims the attention of correspondents of nearly every State. The watering of stock, the fictitious increase of capital by numerous dishonest expedients, and the assumed necessity of paying dividends on this spurious capital, meet the severest denunciations of farmers who deem themselves plundered by an interest that could not exist without the products of agricultural industry, and which was itself built up through the aid of the Government, and for the development of national resources. The feeling is generally one of indignation at manifest in-

justice, and calm determination to use legal and legislative methods to remedy the abuse, with occasional outbursts of threatened violence as a dernier resort. The demand is universal, both for legislation to secure justice in the case, and national laws to prevent undue and prohibitory discriminations between rates of local and through freights. Double-track freight-railroads to the sea-board, either owned or directly controlled by the Government, are demanded by many, to be run in the interest of the people, and not for excessive profit and extortion. Water-routes for cheap transportation are also desired.

The farmers appear to be thoroughly aroused, and they have the power, rightly used, of enforcing their demands. It is important for their own good and the welfare of the country that they stand firmly for all that is right and submit to nothing that is wrong.

While it is true that the cost of freight is a burden, and that the injustice of railway extortion should be remedied wherever it exists, it does not follow that the "hard times" of which the western farmer complains are due exclusively to excessive railway freights, or that any reduction of freights would insure high prices and satisfying profits. The main causes of low prices are overproduction of certain staples, lack of variety in agricultural production, want of home markets, and the need of a withdrawal of western labor from the farm to the workshop and manufactory. This is the view of our most intelligent correspondents, and a truth which must enforce itself upon the belief and practice of the West, or low prices will be lower and hard times harder, even if railways should carry at cost, and all local and national taxation should be remitted. The following extracts, a few selected from hundreds, embody most of the various suggestions presented on the subject:

Kent, R. I.—I know that the most active and intelligent minds among the people, whether producers or consumers, are agreed that, before any permanent good can result to the farming interest, we must have several lines of communication (transportation) opened with the far interior of the country, to be built and controlled entirely by the Government, with the rates of transportation fixed so permanently, and at such prices, as will insure to producers at the West entire exemption from the uncertainties which always attend private corporations. When the Government gives us these things it will have done for the farmers something equivalent to what they have been doing for the industries of the miners, the workshops, and the mills, ever since the Government was organized. The produce and grain exchanges of our commercial cities, in combination with the great lines of transportation, now fix for us the price of nearly every pound of flour, corn, and meat that goes upon our tables.

Wythe, Va.—On account of what is called a discrimination between *way* and *through* freights, it costs as much to market cattle, sheep, hogs, or grain, from here to Baltimore as it does from Memphis, which is three times as far.

Frederick, Va.—It costs as much to send a bushel of wheat, corn, etc., to market as it does a farmer who lives five hundred miles west of us.

Freestone, Tex.—Cheap freights will almost entirely revolutionize farming in this State, as it now costs nearly as much expense to ship all kinds of esculents, grain, etc., as it does to produce them, thus depriving planters of a ready market.

Lake, Ind.—Co-operation or combination of farmers, if managed judiciously, may, to some extent, influence legislation in regard to rates of freights for transportation, but the thing of most immediate importance is more railroads, and double tracks, between Chicago and the eastern sea-board. The whole West has for years been filling up with railroads and producers to an almost limitless extent, while for the last twelve or fifteen years hardly one single facility for transportation has been added between Chicago and the East. More facilities and competition is what is most wanted.

Richland, Ill.—I would suggest as a remedy, a full execution of the laws of the State. The State has made wholesome laws in regard to common carriers, and appointed three commissioners to attend to overcharges on freight. When a complaint is made to any one or all of these commissioners, *the reply usually received is a copy of the law in regard to railroads*, and the matter ends there, unless the shipper enters a suit against the railroad company, when he is taken through a full course of law, and, although he beats the railroad company in the suit, his loss by attorney's fees, of time, etc., amounts to more than what he gains: the result deters many from a suit, and the railroad company keeps on charging as high rates as ever. As a

Illustration: D. Scott & Co., of Olney, are large shippers of eggs to New York City. The freight on a barrel of eggs to Vincennes, thirty-one miles from Olney, is as much as from Vincennes to New York City, nine hundred and thirty-six miles. At Vincennes there are two roads leading east, one via Indianapolis, one via Cincinnati. D. Scott & Co. have been at law with the Ohio and Mississippi Railroad for the past fifteen months, and the prospect is that it will not be settled in the next fifteen months. If the farmers would combine and raise a fund to oppose the railroad companies, it might do some good, provided the suits did not drag too slowly through the courts, or the railroad-trains quit stopping at our stations, as they have done at places on this railroad.

Mower, Minn.—The farmer has no chance, for as soon as there is an advance of any importance in the eastern markets the railroads raise their freights to correspond with the advance.

Kankakee, Ill.—The cost of sending a bushel of corn to Chicago, a distance of but fifty-six miles, is 10 cents. Price paid for same here (Kankakee) is 22 cents. Unless some power controls these monopolies the people will assert their rights by other means than by legislation. They are creating a magazine by their exactions and persistency that must explode some day when they least look for it. The people of the State, not *farmers alone,* are now organizing to protect themselves, and they will do it.

Olmsted, Minn.—It costs us more to send a bushel of wheat from here to Winona, sixty-eight miles, than it does from Mankato to Winona, one hundred and thirty-five miles. Now, it is plain that if it is worth but 8 cents to take it one hundred and thirty-five miles, it cannot be worth but 4 cents to move it sixty-eight miles. We pay 10 cents to take it sixty-eight miles. Interests are conflicting, and a war between them not only probable but imminent. Either will admit this view to be wrong and detrimental to their interests, but I suppose neither will retire while the other is on the war-path. Voluntary submission by both to fair legislation on the subject of freights and tariffs would certainly be a great improvement over our present overcharging and unsatisfactory manner of exchanging our products and manufactures.

Beaver, Iowa.—These corporations have been built up, fostered, encouraged, and supported by our national and State governments, enriched beyond measure by grants of the people's property, until with hundreds of millions of stock, inflated or otherwise, they seek to bribe every department of the Government, and consume the remaining substance of the people. Our legislators are bribed and their mouths stopped by free passes on all these roads; the publishers of our journals throughout the State are silenced in the same manner; and no voice is raised in sympathy for or defense of the masses, or against these engines of oppression which are crushing out our existence.

Hardin, Iowa.—A man by the name of Merry actually demonstrated, a few years since, that wheat could be shipped as cheap from Dubuque to Liverpool, via Mississippi River and New Orleans, as to New York. A company was formed and warehouse erected in New Orleans, and then—we were disappointed. Chicago saw it, Chicago felt it, and Chicago bought Mr. Merry off by giving him certain transportation monopolies in Chicago itself, and thus ended Mr. Merry's practical scheme. Not so, however, Mr. Merry himself—he grows richer and richer, and cares not a fig how wheat gets to New York or Liverpool so that he reaps his transportation profits in Chicago.

Green, Wis.—Freights from Monroe to Milwaukee have gone up from $20 per car to $35, which is an addition of 75 per cent.

Green Lake, Wis.—I would suggest that Congress regulate the railroads. Give us an appropriation for the Fox and Wisconsin River improvement, and open water communication between the East and West; or that western people manufacture their own goods and consume their own productions.

Carver, Minn.—There are many railroads in this State that refuse to ship the produce of farmers, in order to give speculators a chance to make money in combination with the officers of the railroads.

Henry, Ill.—If the Agricultural Department would aid in urging Congress to lend its aid in constructing a double-track railroad from the Mississippi River to the seaboard, say New York, with a charter compelling said railroad to carry freight at a uniform and reasonable rate, this would of itself compel other railroads to carry at nearly the same rates.

Iroquois, Ill.—The principal cause of discouragement is the combination of railroad companies to collect from one-half to three-fourths of the proceeds of our crop to carry the remainder to the consumer. The General Government must encourage manufacturing interests in the west, by this means bringing the consumer to where our corn, beef, and pork are raised, and regulate the charges of carriers either by competing lines or statutory restrictions in charges.

Jasper, Iowa.—I would suggest that one grand trunk double-track line of railroad be built from Chicago, or some other point on Lake Michigan, to the sea-board, owned, run, and controlled by the General Government, also another on the great Mississippi River to some point on the sea-board of some southern State, say North or South Carolina, transportation to be fixed at the lowest paying rates.

Mahaska, Iowa.—It costs to-day four bushels of corn to carry one bushel to New York, whereas, if the railroad business was *honestly* managed, it would require only one bushel to take another there. There is no remedy for this trouble this side of the halls of Congress at Washington.

Tama, Iowa.—Hundreds of thousands of acres are, and will continue to be, brought into cultivation each year, in the West and Northwest, far more rapidly than markets for products are apt to increase. The high freight-tariffs on railroads almost exclude western farmers from the markets of the world.

Grundy, Iowa.—Railroad tariffs are almost double what they were when most of us came here to settle. We must abandon raising wheat in this great grain-field of the Northwest, and the world must look elsewhere for food.

Ripley, Ind.—The great trouble with us is that we have to pay as much freight from here to Cincinnati, fifty miles, as they do from Vincennes, one hundred and twenty miles west of here; and why? Because at the latter place there is another road to Cincinnati, hence there is competition; here there is none.

Saint Louis, Mo.—Causes of discouragement are high prices of land, high prices of labor, high taxes, general advance in prices of all articles consumed on the farm, and comparatively low prices of farm products. I can conceive of no remedy except cheaper transportation to the sea-board.

Mississippi, Mo.—The greatest cause of discouragement to farmers is at this time the very low price of corn and the very high price of railroad transportation. At this time, Atlanta, Georgia, and Mobile, Alabama, are our best markets for corn, to transport which to either place the railroad companies charge 39¼ cents per bushel; sacks, storage, and commission cost 13¼ cents per bushel, which, taken from 85 cents, leaves 32¼ cents per bushel to the producer; showing that the railroad companies receive 6¼ cents more per bushel for carrying the corn some seven hundred miles to market, than the farmer does for raising, shelling, sacking, and hauling it to the railroads.

Nemaha, Nebr.—It costs us an average of 68 cents per bushel to transport corn to New York; it sells here at 15 to 18 cents per bushel. If we save the freight on one bushel it is equal to raising four. Farmers must refuse to sell grain or stock when the price is below the cost of production.

Montgomery, Kans.—At the rates now charged, a farmer shipping 100 bushels of corn from this county to Chicago, our best market, and selling at the market price, would not have money to pay the freight, but would actually come out considerably in debt.

Johnson, Kans.—Suppose railroads reduce freight on corn one-half their present price, there would be such a quantity thrown into the eastern markets that the price would fall there in proportion, so that we would receive but little benefit.

Minnehaha, Dak.—Farmers look to the Agricultural Department to impress this view upon the minds of our Congressmen—that it is useless to try to stimulate the agricultural energies of the far West while it takes three bushels of corn to send one to market. Such has been my experience while in the country.

Napa, Cal.—Fruit-growers are discouraged by having a market limited to San Francisco, while the markets of the eastern cities would be open to them but for the high freights of the transcontinental railroads. Grape-growers would gladly sell Muscat and other choice varieties of table-grapes at 2 cents per pound at their vineyards, and eastern cities would cheerfully pay from 10 to 15 cents (wholesale) in their markets; but high freights keep the producer and consumer apart. Grape-growers complain also of adverse legislation in Congress, by which the waste of their crops cannot be utilized by conversion into spirits. On these accounts the vineyard interest languishes.

Placer, Cal.—The farmers on the Pacific coast are sorely pressed by a monopoly too powerful, we fear, for our efforts to overcome. I refer to the railroad monopoly, combined with the San Francisco grain-ring. The number of men in these two monopolies does not consist of over one dozen, yet they have such a combination that we farmers are entirely at their mercy. The railroad monopoly owns every mile of railroad in the State, and have purchased all the steamers and freight vessels on our rivers, and hence they have the entire carrying trade in the State, and now charge double for all freighting they do. The railroad monopoly and grain-ring have swindled the farmers this year, in freights and purchasing our grain at less than it was worth, over $12,000,000 in this State. Our only hope of relief is that Congress will regulate the price of freight on the railroad which was built with Government money. That power once broken everything else will regulate itself.

Sonoma, Cal.—Our wheat-raising farmers have much to contend with. As wheat cannot be exported in bulk the farmer is compelled to pay on an average 10 cents per bushel for sacks, which aggregates quite a tax on him. Then the local railroads, by a high tariff of freights, extort all they can from him; thus, from this place to deep water, fifty miles, the rate of freight is $5.50 per ton of 2,000 pounds. Then speculators in San Francisco, charter, in advance of arrival, all the ships on the way to that port, then raise rates of freight 100 per cent., and finally wind up by buying the farmers' wheat at their own price, often not enough to pay all the expenses of its cul-

tivation. The want of co-operation among farmers has been a serious evil. An effort is now being made to organize "farmers' unions" throughout the State; with what success remains to be seen; if successful, it may result in great benefit to our farmers.

HOME MARKET AND MANUFACTURES.

A few extracts from correspondence will suffice to show the tone of their communications, as the subject is one upon which there can scarcely be a division of opinion:

Pickens, Ga.—We have one of the finest counties in the State, abounding in iron ore, marble, inexhaustible, never-failing water-power. All we need is to have our resources developed. But we are left too poor, and capital follows the line of travel westward, while untold millions lie embosomed in our own soil.

Jackson, N. C.—Our present want is a home market for heavy products, such as hay, potatoes, apples, cabbage, &c. Transportation lines of railway, the opening of our rich veins of copper and mica, or the development of manufacturing industries at the falls of our rivers, would give to agriculture a great impulse.

Union, Tenn.—Our farmers are discouraged for the want of home markets. We need railways. We are rich in mineral, timber, marble-quarries, and also have a considerable surplus of farm products.

Humboldt, Iowa.—We need a home market for surplus products. Stock-raising should be increased. We should have more mills, more factories, more machine-shops, and a more diversified industry to remedy the evil.

Union, Pa.—The cause of discouragement is the small yield of wheat, the low prices of corn and oats, and the high prices for labor and agricultural implements, and what the farmer has to buy generally. Remedies would be, more enterprising men to start up factories, furnaces, &c., for we have plenty of iron ore in this county; a cheese factory and canning establishment, which would give an opportunity to raise more fruit and garden truck, and afford a market for the same.

Fayette, W. Va.—We want energetic capitalists to build factories and develop the resources of our county. We have fine timber, good water-power, coal, and other minerals in abundance. We can produce nearly all the fruits and vegetables suited to our latitude.

Washington, Wis.—The farmers of this county are very little affected by the high charges for freights of railroad companies, as is the case further west and south of us. We live near the best markets of this State, and make but little use of the rail.

Clark, Ill.—My only hope of remedy is for the eastern manufacturers to move to the West where their bread and meat are raised, and divide what is now paid for freight both ways between themselves and the farmers. They can get their cotton delivered just as cheap in Illinois as at New York or Boston; they can get their wool much lower, and the hides for their boots and shoes for about one-half, and save 100 per cent. on their bread and meat, and still give the farmer much more for his products than he gets now.

Sangamon, Ill.—The establishment in our midst of manufactories to work up raw material, thus increasing population and creating markets at home, and resulting eventually in a greater diversity of farm products, is our great want.

Ford, Ill.—Although cheap freights would help us, the building of factories is what we most need, and the farmers hail them with joy wherever they spring up.

Putnam, Ill.—Increased facilities for getting our products to markets by means of water and railroad communications are needed, and a home market created by diversity of industries, particularly by building up manufactories among us. Combinations at present suggested are farmers' clubs and granges for discussion of the situation, and taking action on the results arrived at thereby. And one of the results will be that farmers will not long submit to being oppressed by the moneyed monopolies of the country.

Peoria, Ill.—We need more population and more capital, and we need to have them devoted to manufactures, mining, ship-building, and navigation. This will give us not only an American market, but, throughout a large part of the country, eventually, a home market, thus solving effectually the question of transportation, and doing away with the necessity for combination. For the purpose of fostering these interests we must have a liberal, uniform governmental policy.

Cherokee, Iowa.—I think that home manufactories are needed. If we had woolen factories it would pay to raise sheep, as the country is well adapted to that purpose, it being dry and healthy, and we have good water-power for manufacturing purposes.

Jefferson, Iowa.—Let the farmers of each county encourage the establishment of manufactories of all kinds at the county-seats, and for which they can supply a large proportion of the raw material. These will give them a home market for the raw material and an increased home demand for their produce. Instead of forming granges

to buy goods and sell produce thousands of miles away, establish factories and produce the one and sell the other right here at home.

Logan, Ohio.—It may be said that the raising of grain, whether it paid or not, has been the one steady, unvarying feature of our farm arrangements. Notwithstanding the extra labor incurred, the expense of seed, and above all the impoverishing of the land, we still adhere tenaciously to those productions which, although they may not pay, always find a ready market at some figure. And *there* may be the secret of our persistent adherence to the practice. The old saying, that a home market is the best market, would, if it were possible to carry it out in practice, obviate most of the difficulties against which our farmers have to contend. The remedy is not to disconnect ourselves from manufacturing countries by ceasing to use their manufactures, but, by encouraging such industries in our midst, establish home markets for our own productions.

Martin, Iowa.—This county is underlaid with iron and coal; it has large forests of valuable timber, and immense deposits of valuable stone, freestone, limestone, and grit, together with soft, clean sandstone, suitable for glassware, and, in addition to these, about thirty miles of the finest *water-power* in the western country. If these now almost neglected sources of wealth were properly developed our discouraged farmers would reap their share of the general advantage. There has been considerable machinery erected in the county during the last few years, several mills, stave factories, hub, handle, and shingle factories, and one blast-furnace, and the produce market has thereby been materially improved.

Douglas, Kans.—Increased facilities for shipping West is near at hand, and also South, to the sea-board, at Galveston, Texas. With this commences a beginning of manufactures in Kansas. A dam is in process of construction across the Kansas River, in Lawrence, for cotton-mills, and woolen factories, and flour-mills, so that the cotton of Texas and the New Mexico wool may soon be made into cloth at our own doors.

Newton, Mo.—Last fall a good pair of heavy winter-boots, suitable for a farmer, was worth $6; oats were worth from 15 to 20 cents per bushel; hence, to get a good pair of boots, a farmer had to give from 30 to 40 bushels of oats. I think it would be better for farmers here if the county produced at home more of the articles we consume. Last fall we sold a fat beef for 2 cents per pound, gross; the hide was shipped, perhaps, to Boston to be converted into boots and shoes, and then shipped back to us to be sold at an enormous profit to all whose hands it passed through.

Orange, Ind.—The remedies are simple and certain. Let the farms rest, and the farm laborers go to work in the manufacturing establishments.

Caldwell, Mo.—In my opinion the want of a home market for the products of our farms is the base of all the difficulties. Any form of co-operation that will give us manufactures, vary our industries, and prevent the sending of our money out of the county, or any combination that will improve our stock and improve our methods, will be beneficial.

GREATER VARIETY OF PRODUCTS.

A few extracts from the suggestions under this head must suffice:

Putnam, Ga.—Every one seems to understand that it would be better for all to plant less cotton and more small grain, but none are willing to practice it themselves.

Titus, Tex.—The great cause of discouragement is the almost universal direction of labor into the corn and cotton channel, making us dependent on other people for everything except our corn-bread. The remedy is patent—diversity of labor and product. Our soil and climate are congenial to all sorts of products, and we shall bless the man or means that can bring our people to a sense of their own best interests on this point. There can be no reason why we should be slaves to other people for the supply of our wants when we have the means at our own doors; but "cotton is king," and until he is dethroned we must be his suffering subjects.

Queen Anne, Md.—While corn continues at so low a price as to cause much to be used as fuel, and while the grain we *export* does not pay for the sugar we *import*, I can see but little hope for improvement. It is absolutely necessary that a considerable portion of the labor and capital now employed in growing grain, to still further depress a glutted market, should be diverted to the production of beet-sugar. The statements and arguments of your annual report for 1871 (page 298) are enough to convince any reflecting man of this fact. If private enterprise cannot effect this, let Government aid be granted; not, however, upon exorbitant tariff duties upon an article of prime necessity, which has become so essential to the comfort of every workingman's family, but in the shape of a *bonus* to the successful producer. I think that such a system would, in a few years, render beet-sugar factories self-sustaining. Thus, by retaining in the country $75,000,000, now sent away for sugar, and also by diminishing the production of our great staple, Indian corn, relieve our markets of that constant glut which now causes its production to be only profitable to railroad companies and commission merchants.

Fayette, Tex.—Up to 30½° north latitude we have as fine a sugar-growing region and climate as could be desired, and now that cheaper modes of manufacture are brought to notice, through the introduction of sorghum, small planters and men of limited means can turn their attention to this staple profitably.

Clark, Miss.—Much might be accomplished by an association of planters of each township, or of the whole county, to be called the "Experimental Association," offering premiums to any member of the association that should, by an experiment on a given amount of land, produce the largest crop of wheat, rye, oats, barley, grasses, or any other kind of crops not generally grown in the county. Such a course would lead to a discovery of such untried crops as would yield well, the kind of land suited for such productions, fertilizers, &c.

Henry, Mo.—In 1868 many thousand acres of wheat were sown in this county, the seed costing $2.50 per bushel. The crop gave splendid promise in May, but rainy weather set in May 26, continuing to July 4, keeping the straw green about fifteen days after the ordinary time of harvest. This cut the crop down to an average yield of about 17 bushels, while not less than 30 bushels was confidently expected. The crop was sold at from 70 cents to $1 per bushel. It was claimed that the price realized only paid for the outside, or hired labor, and the farmer received no compensation for his labor or use of land. In 1870, 1871, and 1872 it has again been tried, with loss, in almost every instance caused principally by the attacks of chinch-bugs, and the price has improved but very little. Low prices must continue so long as railroads continue to charge double rates west of the Mississippi, as compared with the East.

MIDDLE-MEN AND MONOPOLIES.

Middle-men, although not producers, are necessary and useful in their legitimate sphere; but they become, when using their facilities for combination to depress prices of products in first hands, a terrible scourge, often taking, for a small service, more than half the market-value of a commodity, and leaving for the producer less than the cost of production. This evil was treated fully in the annual report of 1870, but a glimpse of it as it exists in 1873 is given from our returns:

Middlesex, Mass.—The discouragement of farmers arises from the presence of middlemen, who absorb an undue proportion of the profits. As society is at present constructed, these seem a permanent evil, for farmers cannot combine over a sufficient extent of territory, or for a long enough time, to influence the markets. The milk-producers have made the attempt, and the effect has been to extend the area of competition. The wholesale-men buy milk at remote stations on the railroads, where the cost of raising it is less than here, and thus force the price; and railroads carry for them under contract, and will not take individual cans at the same rates for our producers. When hay is $35 per ton, and land and taxes correspondingly high, even six cents a quart, with average cows, will constitute a loss. When land is low in value, and hay $8 or $10 per ton, 3 cents a quart for milk may give a profit to the producers. Thus—average yield per cow, 1,300 quarts, at 6 cents per quart, is $78. The cow eats the equivalent of three tons of hay a year, at $35 per ton, $105. Loss, $27. Again, 1,300 quarts, at 3 cents, $39; 3 tons of hay a year, at $10 per ton, cost $30, leaving a profit of $9. However, the farmer nearer the market, and subject to a greater competition, necessarily keeps a lot of dairy cows far above the average, and this theoretical difference would not hold. The effect of this competition has already forced the sale of dairy stock in some neighboring towns, and a change in the system of farming.

Sussex, N. J.—Another cause of discouragement among farmers is the way they are robbed by middle-men. For example: the farmer does all the hard work in seeding the land, gathering the hay, pasturing, foddering, and stabling the cows, and in milking them and delivering the milk at the railway-station. He gets for this, on an average, between 3 and 4 cents per quart, while the parties to whom he sells, with but little trouble, dispose of it at 10 cents per quart. The farmer remains a poor man, or only makes a comfortable living, while the other realizes a fortune in a very few years. Again, the milk delivered at the depot does not all reach New York, as thirsty laborers and railroad employés regard the cans as public property, and the loss from short measure is charged to the farmer, who also has returned to him as "sour" what the New York man may be unable to dispose of in summer when milk is plenty.

Richland, Ohio.—The capital causes of discouragement are found in the rings, cliques, and combinations among speculators and middle-men, from the buyer on the street, up through the entire chain of harpies, to the gigantic railroad monopoly; the last mentioned of which nothing less than the strong arm of Government can successfully grapple with. From the pea-nut boy at the street-corner, up through all the varied

ramifications of trade and commerce, we believe an organized scheme exists to force upon the farmer (in common with others) the highest possible prices, while at the same time, by the force of this organized scheme, to compel him to take the lowest figure possible to extort from him for what he has to sell. After this manner does this ruinous railroad combination swindle us all in common. All we ask is a fair field and no favor. Let us have healthful competition, and then give the law of supply and demand full swing, and we are satisfied to take our chances in the great battle of life. But, in the name of our common humanity, we do protest against organized robbery. At our county-town, which is our main market for farm products, we have two firms who are produce dealers, that is, grain-buyers. But there is no competition between them. It is a combination, and it matters not which party makes the first bid; the other never overbids, but they divide the spoils of each day between them amicably. Hence you see, by thus combining, they compel the farmer to take whatever price they may choose to offer, or haul his grain home again, to be treated in the same style at any future time he may appear in the market. Thus is the farmer taken by the throat and ordered to "stand and deliver," after the manner of highwaymen, with this difference, that in the *latter* case you have a chance for your life, but in the *former* none. The thirty or forty groceries in the town have adopted the same system of tactics, but their blade cuts both ways. They are combined to fix the price of butter, eggs, garden products, and the small fruits, and no one is allowed to pay more than this *caucus* price, but as much less as he can. So if you go the round of the groceries after the first offer you cannot get a higher bid. But while you are compelled to take what they choose to offer, you are also forced to pay the established combination price for what you purchase. Thus the grocery-ring doubly robs the farmer. I care not where you go, whether to the cobbler or the locomotive-builder, and to every trade and mechanic art between, whether to the pop-corn boy or to the wholesale merchant, or to any branch of trade between the two, and you will find that they all know to a penny just what their wares are worth, and are allowed to fix this price, and if any body objects they combine to compel it. But how is it with the farmer—without organization, without combination—single-handed and alone, a static anomaly—a target for any or all of the legion of harpooners!

Franklin, Ind.—We are not paid for our labor. Our products are mostly below cost. We are the victims of powerful combinations; railroads eat us up with freights both ways. Pork-rings dictate the price of our pork with an absolutism against which we have, as yet, found nothing to oppose. They bought our hogs this year for just what they chose to give, from 3¼ to 3½ cents per pound, and when the market was over they run it to 5 and 5½ cents, and boasted to our faces of their power to do this.

De Kalb, Ill.—Aside from dairying and wool-growing there is scarcely a farm under the best of management paying more than to cover the expenses of production and working, saying nothing of the interest on the money invested in land, fixtures, implements, and taxes. The sharp practices of those who handle, as middle-men, the products of the farm, operate continually against the interests of agriculture.

Will, Ill.—Another great cause of dissatisfaction among farmers is the gambling on the price of grain by the boards of trade in large cities, which has the effect to take too much of the produce to pay for the handling between producer and consumer.

Butte, Cal.—The causes of discouragement existing among farmers are monopolies which completely block every avenue between them and their market. During the past year grain-sacks, ocean tonnage, and inland transportation fell into the hands of combinations and rings. There is another cause which may discourage some, the glaringly apparent decrease of production by continual cropping; intelligent farmers must see it, but as yet no one stays his hand. As a remedy against monopoly farmers are beginning to organize into farmers' clubs, and to talk earnestly, and, in some instances, to subscribe to encourage the building of narrow-gauge railroads. But there is a deep and wide-spread feeling that the present powerful monopoly will crush or purchase everything in the form of opposition until the Government assumes and controls the railroads, at least the trunk-lines, in the interest of the people. The State government may possibly do something to regulate the rate of freight, but it is by no means certain, for the contest will be with a corporate power whose revenues surpass those of the State itself, and able, if so disposed, to make everything bend to its purposes.

Conejos, Colo.—An old Mexican land-grant has been sprung upon us, and, if approved by Congress, all the inhabitants of this, and about one-third of those in Saguache County, will be compelled to leave their homes and improvements, as the grant-holders propose selling to some of the railroad companies. The tract is about eighty by one hundred miles in extent. This uncertain tenure prevents permanent improvements, and induces the raising of so much stock, as it can be driven off if the claim of the grantees should be approved. Most of the inhabitants have lived here since 1854.

CO-OPERATION.

The subject of co-operation for the remedy of evils afflicting agriculture is presented in the following extracts:

Richland, Ohio.—We know of no better way, and, indeed, there seems to be no choice left us but to meet intellectual force with intellect, combination with combination, and plot with counter-plot. Every trade, art, and profession (except farming) is combined; and though the segregated location of our rural population is a powerful drawback to our movements in this direction, yet with us it is *combination* or *annihilation*. What we need is, first, light for the millions. Then we want action in the right direction, action for the development of the head as well as hand, combined action, mutual and determined.

Owen, Ind.—Co-operation among farmers for their benefit has never been, nor will be, secured in this country while they are led by politicians wanting their votes from purely selfish motives. Again, we as a class know too much individually to feel the necessity of acting together.

Wood, Ohio.—With the present low prices of grain, and high rates of transportation, the producers will be compelled either to abandon their farming business, or to form co-operative societies in every county, with a central head in each State, to obtain and disseminate information in regard to all crops, the probable demand for the same, &c. Also, to use some effort to counteract the influence of the immense combinations formed against the producing classes.

Brooke, W. Va.—Their produce has to pass through so many hands before the consumer gets it that the farmers get much less, and the consumer has to pay much more, than the value. For instance, fat cattle are sold to drovers for 4 cents per pound; the drovers sell to the butchers at 6 to 7 cents per pound, and the butchers sell to the citizens at 16 to 20 cents.

Seneca, N. Y.—In that word *combination* is embodied the chief cause of discouragement to the American farmer. Combinations to force up prices of labor, of manufactured articles, of interest on money, of salaries. Combinations to force down the price of farm products, to lay upon the farmer the whole cost of transportation. Combinations to exempt personal property from taxation; and combinations to steal the nation's purse after the Credit Mobilier fashion.

Jefferson, W. Va.—The best form of co-operation would be for farmers to combine and send farmers to Congress and the State legislatures, instead of so many lawyers and small politicians as are now put into such positions. This was fully illustrated in the late constitutional convention of this State, where there were *thirty-four lawyers in a membership of seventy-eight*, and we got a constitution made for the especial benefit of lawyers.

Sumner, Tenn.—They cannot feel encouraged to see other interests grow strong by reason of their close organization and extended combinations, while they, separated, spread out over a world of territory, must meet these combinations, backed by all the power that legislation can afford them. How this can be remedied is with us a most vexed question. Many there are who favor as thorough organization by counties, States, and national as is possible for so numerous a class, giving to the great central organization such powers as will make itself felt in the legislation of our country, and also exert its influence upon all other organizations and combinations.

Shelby, Ky.—Well-organized farmers' clubs in every agricultural district of the country, with an annual congress composed of one delegate from each club, would have a tendency to counteract to some extent the discouraging influence that now threatens to overthrow the best interests of agriculture. By this plan the voice of the farmer would be heard in the councils of the nation, their claims considered, and their grievances adjusted. Scattered, as they are, over a large expanse of country, without organization or co-operation, they feel themselves powerless to counteract any influence that is now working detrimental to their interest. "In unity there is strength," is a maxim felt and acted upon by every class of the community, save the farmer, who, by force of circumstances, plods along the pathway of life unaided and alone, a prey to every combination to feed and fatten upon his labor.

Rush, Ind.—And nothing short of a general organization of clubs as seconds to a close national organization, working in unison, will be effective. Numerically he has the power—only teach the will to act prudently in defense of his rights.

Calhoun, Mich.—Your correspondent has little faith in any form of co-operation or combination, except such as shall unite the surplus accumulations of the farmer and the business man in the erection and operation of such manufacturing establishments as will supply the community with indispensable articles of daily use and necessity, and thus save to the community the enormous tax they now pay to railroads for freight and to middle-men and manufacturers for profits upon such articles. For, while we now only furnish the raw material at a trifle above cost, not only would this vast expense be avoided, but the secondary effect would be scarcely less important in

the increased number of the non-producing class who would be cash consumers of the corn, wheat, meat, eggs, fruit, vegetables, butter, wood, &c., of the farmer.

Juneau, Wis.—If farmers would form combinations or associations, and appoint some of their best practical business men to sell their produce, instead of being sold in little lots and parcels, in this way paying prices might be obtained. Three-fourths of last year's hop crop was sold for from 18 to 20 cents per pound through the unscrupulous combinations of a few merchants and speculators, by their rings and corner operations.

Appanoose, Iowa.—I do not believe that combination or co-operation can cure these evils. Nothing but individual effort, good judgment, and hard sense, learned in the school of experience, will do it. We cannot legislate money into our pockets. Our western products must seek a market in a concentrated form, or middle-men and railroad freights will eat us up.

Clinton, Iowa.—The difficulties that farmers have to complain of are exorbitant freight charges, middle-men, and bad legislation. In our legislature every man is offered a free pass over the railroads, and probably not half a dozen refuse them; furthermore, the leading spirits in the legislature are lawyers, and the laws are made to foster litigation, otherwise their vocation would be gone. Our whole legislature is bribed to the interest of railroads, and a purging of it is needed. The fact is, our leading men, or a majority of them, the judges, lawyers, and leading politicians, all have free passes over every railroad in the State, and these have to be supported by the farmers, by hook or by crook. If the farmer could receive one-half the price the consumer has to pay, he would be much better paid than he now is.

Jackson, N. C.—If we had the moral sentiment to sustain and enforce the penal laws, millionaire thieves might in the penitentiary be turned to some benefit to agriculture. They could be taught to make plows, axes, and hoes.

Lawrence, Ill.—The farmers could perfect the most successful combination that ever was effected, if they would work together. Amid all the discouragements and difficulties there is a constant gradual advancement in the art of properly cultivating the soil—an advancement that is clearly seen each year, that is telling on the resources of our great country. The Department of Agriculture and the agricultural press are the agents through which this will be accomplished.

Ellsworth, Kans.—I can see no cause of discouragement, if farmers will protect themselves by electing men of their own class to the offices within their power to elect. If a majority of our Congressmen were farmers, sent there by farmers, our interests would not suffer for proper protection.

Box Elder, Utah.—No special causes of discouragement exist here. The farmers and others have adopted a co-operative principle, and have built a good woolen factory, tannery, store, shoe-shop, dairy; and all, as well as the sheep-herd and farm, are flourishing finely. I think that when farmers can thus co-operate it is a power in their hands which has a modifying effect upon the markets, preventing in a great measure monopolies in the staple articles of life, as combinations of this character could open up business relations with manufacturers and foreign dealers direct, thus cutting off all intermediate dealers and merchants who thrive and get rich out of the farming community.

Weber, Utah.—The stock of this county is in a co-operative herd, and is kept upon a herd-ground some seventy miles away. The company declared a dividend last November of nearly 40 per cent. on the capital invested.

The word "combination" seems to have acquired a wicked significance, in view of some farmers. Let them use instead "co-operation" if they prefer it; but they must remember that there is no human being entirely independent of all others. Without association there would be neither churches nor schools, government nor social institutions. In other industries a large portion of the work done and profits made are through associated effort. There may be association for duty as well as for deviltry. There is no reason why comparative isolation should lead to positive hermitage. A great enlargement of American dairying has come from association; the monthly gathering for sales of farm animals in Madison county, Ohio, have saved immense sums from the clutches of middlemen; the inauguration of market fairs should be general; association for importing or buying animals of the best blood should be more numerous; there should be a farmer's library in every township in the land; farmers should join to build flouring mills, saw-mills, and woolen factories, if they cannot get them otherwise; and they should combine *en masse* to enforce upon politicians, railroad directories, and all others, justice and equity in their dealings with agriculture.

CHEMICAL MEMORANDA.

By Wm. McMurtrie, Chemist.

During the past month the work in the laboratory has been confined to analysis of corn, and principally to comparative experiments with different methods of proximate analysis of cereals, with a view to the determination of that which gives the best and most reliable results, and after some considerable trouble and delay, we have found one which seems not only to yield results which are entirely satisfactory, but also to be free from the complication so troublesome in the other methods in general use. In order that we may be able to experiment further with some few points in the details of working, we shall not publish our method with this month's issue, but reserve it to be published with some other analyses of corn with which we are about to proceed.

The object of these analyses is to determine the comparative value of the most important varieties of corn in the market by a comparison of the relations of the market-values to the quantity of the most important constituents which they contain. The analyses may then be applied to the different purposes for which the grain is used.

To this end we have chosen two varieties of gourd-seed corn, the white and yellow, as being fair representatives of the markets of the North and South, the former representing the southern corn, and the latter that of the North. The following are the results of a proximate analysis of yellow gourd-seed corn grown upon the farm of the Commissioner of Agriculture, in Pennsylvania:

Moisture, (determined at 130° C.)	8.87
Oil	5.17
Sugar	1.10
Gum	1.23
Zein	1.98
Starch	70.66
Albuminoids	7.94
Cellulose	1.72
Ash	1.33
	100.00

It will be seen that the percentage of moisture in this sample is quite low, and this is probably due to storing for some time in the Department building, where the temperature varies from 65° to 70° F., as well as to possible loss in the process of grinding and pulverizing.

Beet root.—The following are the results of an analysis of beet grown in Nebraska, made by Samuel Aughy, professor of natural sciences in the State Agricultural College of Nebraska, during the fall of 1872:

	Per cent
Average amount of cane sugar	13.50
Average amount of grape sugar	0.50
Average amount of potassa and soda compounds	0.43
Average amount of magnesia and lime	0.18
Average amount of nitrogenous substances	0.78

SCIENTIFIC NOTES.

Reduced or reverted phosphates.—During the past few years a great deal has been said and done with regard to the value of the different forms of phosphate of lime so extensively used in agriculture, and the

investigations that have been prosecuted in this direction cannot fail to be of interest and value both to manufacturers and consumers.

Nearly a year ago Dr. R. T. Brown, former chief chemist, advanced the idea in the annual report of this Department that the neutral or reverted form of phosphate of lime is as valuable for all practical purposes as the soluble or acid form, and on account of it was quite severely criticised by some of the agricultural chemists throughout the country. Now it is not our object in the present article to enter into an exhaustive discussion of this question, but to offer a few facts which may be of value to those interested in the subject.

It was objected that although the reduced form is soluble in organic acids and other matters present in the soil, and in this way assimilable by plants, yet in the soluble form it is capable of being more completely mixed with the soil, and in this way brought into more thorough contact with the roots of plants, and is consequently of greater value. But when we consider that the acid phosphate, when brought into contact with the carbonate of lime, iron, and alumina, with a moderate degree of moisture, is, within twenty-four to forty-eight hours, changed into the neutral or reverted form, it will at once appear that, when applied during the dry season, as it generally is, the phosphate is brought into immediate contact with these constituents in the soil by mere mixture, and before sufficient rain falls to spread it by solution, the transformation, in the majority of instances, will have taken place. The reduction can therefore be of no greater damage before application than after it. Nor can storing in warehouses have the detrimental effects that have been ascribed to it. Indeed the recent investigations of Dr. Charles U. Shepard, jr., of Charleston, South Carolina, may very aptly be cited in support of this. He has shown by certain analyses that the production of reduced phosphate by storing in warehouses is due more to the decomposition of the insoluble phosphate than to the return of the acid form, since the amount of neutral phosphate formed in samples stored one year was in excess of the loss of the acid form.

Preservatives.—A great deal has been written during the past few months concerning the preservative properties of different substances, and among those most highly recommended are acetate and silicate of soda and borax. These substances, more especially the latter, have been spoken of as admirable preservatives of milk, and they have undoubtedly a beneficial effect and cannot fail to be of practical value in this particular. We are rather inclined, however, to give preference to silicate of soda, since milk treated with a solution of water containing one twenty-fifth of the silicate, will be kept perfectly sweet for five to six days, and if the cream be then removed the remaining fluid will be found to be alkaline and without a single trace of casein. Boracic acid is much less energetic in its action and retards the separation of cream. For the former, in practice, it is recommended to dissolve about one ounce of the silicate in a quart of water, which may be added to about four gallons of milk. The fact of the addition of water may seem to many to be an objectionable feature in this treatment, but in many cases, where milk must be transported a long distance to market, the discovery may be of great practical value not only to the producer, by supplying a source of income otherwise out of his reach, but also to the consumer, by supplying a larger quantity of a good article at reduced price.

Artificial milk.—During the siege of Paris, a substitute for milk was manufactured according to the following formula: One ounce and a half of sugar is dissolved in a quart of water, and to this solution are added one ounce of dry albumen, (from white of eggs,) and 15 to 30

grains of soda crystals, and the whole made into an emulsion by the addition of one to two ounces of olive oil. As the war progressed, gelatine was substituted for albumen, and slaughter-house fats, purified by melting at 150 degrees, for the olive oil. One firm manufactured by this process 132,000 gallons of milk daily for Paris consumption.

Ceraline.—Messrs. Deveau have succeeded in extracting from wheat from which the bran has been carefully removed, *ceraline*, that highly nitrogenized portion containing phosphoric acid, which forms the compact layer just inside the bran, and is generally removed with it in the usual processes of grinding. This material contains a peculiar principle in small quantity, which stimulates digestion, and is highly recommended by the faculty of Paris as an analeptic when mixed with sugar or powdered chocolate. From this it is easy to comprehend the valuable properties of bran-meal, and if the bran be treated for this substance it may in all probability be obtained in sufficient quantity to be administered with effect in cases of dyspepsia and general indigestion.

BOTANICAL NOTES.

By Dr. George Vasey, Botanist.

Apocynum as a fiber plant.—From the Gardeners' Chronicle (London) we obtain the following item:

The Times correspondent at Berlin writes thus of a new fiber plant: A fibrous plant called *Apocynum venetum* has been discovered growing wild in such quantities, in Turkistan, that it may be expected soon to make its appearance in the market. Its fibers, as tender and delicate as flax, as strong and tenacious as hemp, are, by combining the qualities of the two, greatly superior to either. The Russians will probably endeavor to transplant it to Europe, an attempt which might be made by other countries as well.

It is tolerably well known that our species of *Apocynum*, of which we have two, furnish a superior fiber, as does also the related *Asclepias incarnata*. All these are vigorous, hardy perennials, and could, under cultivation, be made to yield large crops. A series of thorough, well-conducted experiments, which shall test the comparative value and productiveness of our native fiber plants, is much needed. But how shall it be obtained?

Poisonous plants.—Every year, and chiefly in the spring of the year, we read accounts of cases of poisoning by the eating of wild roots or plants. These cases are generally of children who meet with roots which they take to be familiar vegetables, such as the parsnip or carrot. The roots which are the cause of these accidents are usually those which belong to the natural order *Umbelliferæ*, or to the same family as the carrot and parsnip, and some of them are easily mistaken, by inexperienced persons, for those useful vegetables.

Many of the plants of the order *Umbelliferæ* are poisonous, particularly the *Cicuta maculata*, or spotted cowbane, the *Cicuta bulbifera*, and *Sium lineare*, which are distributed ever the entire United States, and a western member of the order called *Eulophus Americanus*. The poisonous principle of these plants is powerfully concentrated in the roots in early spring, just at the beginning of active vegetation. Boiling usually dispels the active and poisonous nature of such roots, but children should be cautioned against eating any wild roots or plants without the sanction of those who are acquainted with them and know their properties.

We have two species of *Rhus* which are poisonous to the touch. One of these is called poison-ivy, and may be met with in almost any woods, running over rocks or ascending trees. The other species is a shrub which grows in swamps. Some persons are much more susceptible than others to the poisonous influence of these plants. Indeed, many people can handle them with impunity, while others are poisoned by a touch, and some think that the mere neighborhood of the plant communicates the poison. The poison-ivy vine is often confounded with the Virginia creeper, or woodbine, (*Ampelopsis quinquefolia*,) which is perfectly harmless. They may be readily distinguished by observing that the leaves of the ivy are in threes, while those of the creeper or woodbine are in fives.

A few of our native plants enjoy the reputation of being poisonous, rather from their relationship to other poisonous plants than from actual poisonous properties. This is the case with some species of *Solanum* and *Physalis*, which belong to the natural order *Solanaceæ*, where also belong tobacco, henbane, nightshade, and other poisonous plants. *Solanum nigrum*, sometimes called ground-cherry, is very common in waste places and in cultivated fields, and is thought by some to be poisonous, but I have often seen its black berries eaten with relish and without harm, and even made into pies, for which they are not sufficiently tart to be agreeable.

Mr. Bailey, in an interesting article on this subject, in the American Naturalist, relates seeing a boy eating the large green potato-berries without any resulting trouble.

We have several species of *Physalis*, or ground-cherry, whose berries, when mature, are pleasant-tasted and harmless. The more general diffusion of botanical knowledge would undoubtedly be the means of avoiding much suffering and many accidents which now occur from ignorance of the nature of the plants.

HARDHACK AND POTENTILLA FRUTICOSA.—Since the publication in the December report of Mr. T. S. Gold's remarks on *Potentilla fruticosa*, several correspondents have expressed their apprehension that he may have meant the *Spirea tomentosa*, which is well known throughout the eastern States as "hardhack." This however was not the case, as Mr. Gold sent a specimen of the plant he alluded to, and it was the true *Potentilla fruticosa*, which seems also to have received the name of hardhack in that part of the country. This illustrates the great difficulty which often arises in identifying any plant by the common or local name. Botanical names, although sometimes hard to learn, have the virtue of being precise, and of always and everywhere meaning the same plant.

In confirmation of Mr. Gold's statement that the *Potentilla fruticosa* was one of the most formidable weeds of that section, we publish the following from Mr. D. F. Smith, of Goshen, Connecticut:

I have wondered whether the "hardhack" referred to by Mr. Gold was not a different shrub from that referred to by Mr. Beardslee of Ohio and others. I would say with all possible emphasis that what we in these western counties of Connecticut and Massachusetts know as "hardhack," and which Mr. Gold identifies as *Potentilla fruticosa*, is a very great nuisance, having caused damage in this town, and in other single townships, that would require thousands of dollars to represent. Hundreds of acres in this town, that twenty-five years ago were good pasture-land, have been rendered worthless by the rapid spread and dense growth of what we call "hardhack."

There need be no difficulty in discriminating between these two shrubs; the *Potentilla fruticosa* has pinnate leaves, and bright yellow flowers, while the *Spirea tomentosa* has single ovate or oblong leaves, and rose-colored or nearly white flowers. *Spirea tomentosa* is more erect and less branching, with the small flowers densely crowded into a spike which terminates the stalk.

FORESTS AND RAIN-FALL.—The "Bulletin of the Torrey Botanical Club" for February contains a letter from Mr. Fred. Hubbard, which

gives a series of facts respecting the relation of rain-fall and forests as exemplified in some of the West India Islands, which we regard as important, and from its bearing on this somewhat disputed subject we think its reproduction here will be useful.

The introductory remarks refer to some previously published statements by Mr. James S. Merriam, of New York:

Your brief published statement concerning the diminution in rain-fall of the island of Santa Cruz is in the main correct, save that it gives the idea of a more rapid change than has probably taken place. At my former visit, twenty-seven years ago, the desiccation had undoubtedly made some progress, but not sufficient to make itself manifest in a very marked degree. The change from fertility to barrenness, which at first must have been almost imperceptible, is no doubt taking place in an accelerating ratio.

Every new plantation swallowed up by the onward march of desolation, augments the cause and renders the arrest of the evil more and more hopeless. This movement is from the east (the windward end of the island) toward the west, and is now quite conspicuous. Every few years an estate, formerly green with cane-fields, becoming incapable of producing further crops, has to be abandoned to the graziers, whose cattle find a meager pasture upon it a few seasons longer. These are in turn driven off, and the land is entirely abandoned. Henceforward it becomes, if not quite a desert, at least a barren waste, producing only a sparse and prickly vegetation, over which a few arborescent cacti reign supreme. A narrow belt of green lines the sea-shore of this region, consisting of cocoa-nut palms, the poisonous manchineel, the sea-side grape, and a few shrubs, whose natural habitat is along the high-water mark; but inland cultivation is impossible without constant irrigation. As there are no streams upon the island, with the exception of a few rills chiefly near the western end, and the wells are failing, no means remain to force life from the unwilling soil. Some attempts were at one time made to arrest this insidious advance, but too late to be effectual. A planter, I was told, not long since set out a thousand trees upon his estate and lost every one. It is probable that had this remedy been universally adopted in time there might be a more hopeful future for Santa Cruz. But the final depopulation of this beautiful island seems now to be written indelibly among the decrees of fate.

St. Thomas, an island lying thirty miles distant, is similarly affected. This island, however, being loftier, and having scarcely any level land, seems to attract to itself a rather more liberal amount of moisture from the clouds.

About fifty miles westward of these islands, and in the same parallel, lies the large island of Porto Rico. The land here is almost wholly mountainous, the eastern ridges rising to 3,000 feet. A large portion of the interior is still covered with primitive forest, a tangled tropical vegetation of vivid perennial verdure. The rain-fall is abundant, and the soil yields bountiful crops of coffee and sugar, with a great variety of fruits.

The contrast between neighboring islands so similarly situated is most striking. The sad change which has befallen the smaller ones is, without any doubt, to be ascribed to human agency alone. It is recorded of these that in former times they were clothed with dense forests, and their oldest inhabitants remember when the rains were abundant, and the hills and all uncultivated places were shaded by extensive groves. The removal of the trees was certainly the cause of the present evil. The opening of the soil to the vertical sun rapidly dries up the moisture, and prevents the rain from sinking to the roots of plants. The rainy seasons in these climates are not continuous cloudy days, but successions of sudden showers, with the sun shining hot in the intervals. Without shade upon the surface the water is rapidly exhaled, and springs and streams diminish. There is also, as many believe, an electrical action produced by the points of leaves upon the atmosphere, compelling it to yield up its moisture. However feeble may be this effect from a single tree, the myriad spears of a whole forest presented to the sky undoubtedly do exert a marked and powerful influence. It is probably from such a combined action that the drying up of the soil from the removal of the trees, destroying the balance of nature, goes on with ever-increasing rapidity.

An equally marked example of the effect we are considering is seen in the small island of Curaçoa, lying in latitude 12° north, sixty miles from the coast of Venezuela. I visited this island in 1845, and found an almost perfect desert, where, according to the testimony of the inhabitants, had once been a garden of fertility. Abandoned plantations, the recent ruins of beautiful villas and terraced gardens, and broad arid wastes without a blade of grass, showed how sudden and complete a destruction had fallen upon this unfortunate little island. The cause was the cutting down the trees for the export of their valuable timber. The effect followed even more rapidly than at Santa Cruz, as the island lies five degrees farther to the south, and the heat is more intense. The rains have almost entirely ceased, and fresh water is among the luxuries. Almost within sight of Curaçoa is the coast of the Spanish Main, covered with the rankest vegetation, over which the burdened clouds shower down abundant blessings.

MICROSCOPIC OBSERVATIONS.

By Thomas Taylor.

Potato blight and rot.—Some eminent chemists, such as Dr. Lyon Playfair, believe that the potato-plant, when healthy, is not subject to attacks from fungi. In a lecture delivered by him before the Royal Agricultural Society of England, December 9, 1845, he remarked that "much had been said and written with regard to the source of the disease, and since minute fungi had been assigned as its cause, potatoes, apples, and other fruits had been inoculated with fungus spores, and had become diseased; but if there were not some previous disease in the potato itself, how was it that some varieties of potatoes escaped while growing in the immediate vicinity, while others were attacked?" The disease, he believed, arose from structural or chemical causes.

When a decayed potato was examined it was found that the diseased spots were always in the region of the spiral vessels, whose function it was to carry air into the tissue of the plants. He believed the disease originated in the oxidation of the tissue. The Rev. M. J. Berkley, the leading mycologist of England, on the other hand, contends that the fungus *Botrytis infestans*, or, as now classed under the new genus, *Peronospora infestans*, will attack the healthy tubers; but the question arises just at this point, what means have we of ascertaining the perfectly healthy structure and chemical state of tubers? Every farmer plants what he deems sound tubers, yet, in the majority of cases, since 1845, the crop during very moist seasons has been more generally affected than it was prior to that date.

The severity of attacks of fungi on plants will depend in some cases on the density of their organic structure and the solubility of their nitrogenous matter. The nitrogenous principle of potatoes, for example, is soluble in water, that of turnips nearly insoluble. The former, therefore, ferments more readily than the latter. The leaves of a healthy peach-tree, when placed in a moist atmosphere at about 75° F., resist fungoid fermentation for months, while those of a peach-tree affected with the "yellows," placed under the same general conditions, will quickly ferment and become covered with the fruit of the fungus mucor. The first possess an antiseptic property, the second are deficient in it. If two blocks of wood, one of boxwood, the other of pine, are placed in a fungoid solution, the first will resist the action of the mycelium because of its density, while the second will quickly decay. The first absorbs a great deal of water, the second very little. A certain amount of moisture, and sometimes of water, is necessary to the growth of fungi.

In years previous to the noted potato-rot of 1845, the average amount of water found in healthy potatoes, according to Professor Playfair, was 72 per cent. That of unhealthy tubers since that date, 80 per cent. The tendency to ferment is therefore increased. It was observed by Professor Playfair, in his lecture alluded to, that a peculiar state of the weather had been observed all over the north of Europe where the disease had been seen, as well as in America. The widespread use of the potato as an article of diet, especially among the laboring classes throughout Europe, must have led to the extensive planting of diseased potatoes in 1846, because healthy seed could not be found. Indeed, Professor Playfair, in his second lecture of the 10th December, 1845, recommends "the planting of diseased potatoes as seed rather than none." He further states that there was no prospect of obtaining

healthy seed from abroad, and that he had permission of the late government authorities for stating that this was the result of their consular returns. The unavoidable adoption of this advice increased the disease in after years, whether it arose from chemical, structural, or fungoid conditions.

If a healthy potato is so dug out on its opposite ends that it will resemble a double egg-cup, and placed erect on one end for about six days in an atmosphere at the temperature of 70° F., its under cavity will become covered with mildew and its fruit will appear in the form of blue mold, *Penicillium glaucum*. In this case the inverted cavity will retain the moisture, and as a consequence slight fermentation will ensue, the fungus deriving its nutriment from the potato; but the upper surface, although fully exposed to the floating germs in the atmosphere, will not sustain a fungus growth, in consequence of the free evaporation of the moisture from it. This form of fermentation should not be confounded with that produced by the fungus of potato-rot, *Peronospora infestans*. The chemical action of the blue-mold fungus is slow, and its odor is simply that of sour paste, while the destructive action of the potato-rot is very rapid, producing a higher state of decomposition and very offensive odors. The mycelium and fruit of each fungus also differ essentially from each other. Both forms of fungus produce oxidation, but with very different results. Consequently potato-rot consists of more than the mere "decay of the tissue by its absorption of oxygen." The purely fungoid theory, on the other hand, will not account for the many exceptions pointed out by those who favor the chemical theory; since it may be shown that as the chemical constitution and density of any vegetable vary, so will the genus and species of fungi be found to vary with the proximate principles of plants.

The following case of rust on the Kittatinny blackberry illustrates forcibly the fact that the structural and chemical condition of a living plant should always be considered in relation to fungus growth on them.

Chalkley Gillingham, of Accotink, Fairfax County, Virginia, under date of Secondmonth 28, 1873, describing the condition of his blackberry canes during the spring of 1872, says that six years ago he planted ten rows of Kittatinny and ten of Wilson in the following manner: First, four rows of Kittatinny, then following, alternately, Wilson and Kittatinny, six rows of each, ending with four rows of Wilson. All had been treated alike from the time they had been received by him, and all appeared healthy until last spring, when the Kittatinny became covered with "rust." At a short distance the rows of Kittatinny appeared as if painted with yellow ocher. Some were destroyed from its effects. None of the Kittatinny canes bore fruit. The Wilson were uninjured, although surrounded by an atmosphere laden with fungus spores. Every leaf of the Kittatinny was covered with hundreds of millions of spores, yet not a leaf of the Wilson was affected. The Wilson canes bore the usual complement of fruit. Mr. Gillingham states that the canes have not been manured for several years.

The glossy covering of fruits and leaves consists of wax, that of the grasses of siliceous matter. The wax may be removed by sulphuric ether, the siliceous matter by caustic alkalies or hydrofluoric acid. Should plants fail to eliminate and cover their surfaces with wax or silica for their protection, their albuminous substances will then afford food for the growth of fungi. Future investigations may prove that in the case of the Kittatinny blackberry alluded to, the absence of this outer protection was the cause of their destruction. The accompanying illustration

is very similar to that given in my former report on potato-disease, (see Report for November and December, 1872, page 510,) in which it is shown that two varieties of potatoes, viz, Jackson Whites and Early Rose, growing in the same field, and treated alike in all respects, were affected differently. The Early Rose potatoes were wholly destroyed by fungi, while the Jackson White, although surrounded by the spores of the potato-rot fungus, were not affected.

Having received a supply of seemingly healthy potatoes from New Mexico, Ohio, and other places, and a few diseased tubers from Boston and Swampscott, Massachusetts, I commenced a series of preliminary experiments to test the chemical and structural theories of Dr. Lyon Playfair, and the fungoid theories of M. J. Berkeley and other leading mycologists.

In four glass jars I placed a pint of water. In No. 1 were placed a portion of fungus *Peronospora infestans*, and the half of an Ohio potato remarkable for its healthy appearance. In No. 2 were placed a diseased potato containing *Peronospora infestans*, and the half of a potato received from Sante Fé, New Mexico. In No. 3 was placed the second half of the Ohio potato alluded to, and in No. 4 the second half of the Santa Fé specimen. In Nos. 3 and 4 was also put half an ounce of pure sugar, to assist fermentation. These specimens were subject, during the experiments, to a temperature of about 75° F. The respective jars were examined from day to day. On the sixth day the Ohio specimen in No. 1 was found to be rotting rapidly, while the Santa Fé specimen in No. 2 was apparently uninjured. Specimens Nos. 3 and 4 were undergoing slow fermentation. At first the water containing the New Mexican specimen became more milky in color than did that of the Ohio specimen, but the deterioration on the third day was greater in No. 3 than it was in No. 4.

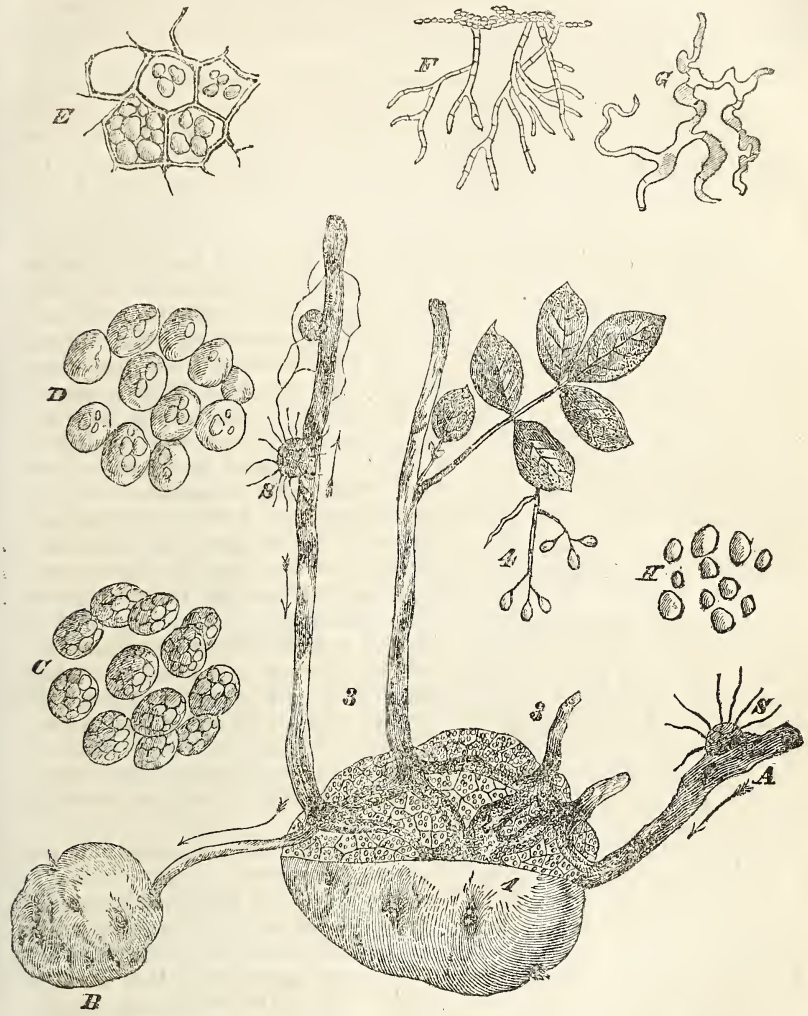
On the twentieth day the Ohio specimen was perfectly dissolved, forming a pulp, while the Sante Fé specimen retained its perfect consistency throughout. On examining the pulp of No. 4 under the microscope I found that the starch-granules were arranged in cellulose cells, no liberated granules appearing on the field of view. Bundles of mycelium and budding spores appeared in profusion between the cells. Few infusorials appeared in view. The odor was slightly sour. The appearance of No. 4, as seen under the microscope, of about 80 diameters, was remarkable as contrasted with No. 3. The latter specimens presented a mass of infusorial life, mycelium, and budding spores. I made many examinations of the pulp to detect starch-cells if present, but found none. The fermentation had completely destroyed them. The odor was very bad.

The Ohio specimen in No. 1 rotted much quicker under the influence of *Peronospora infestans* than it did under the *Torula* fungus favored by the action of sugar in No. 4 solution.

The Sante Fé specimen in No. 2 resisted the *Peronospora infestans* fungus better than it did the *Torula* fungus in No. 4; but, by the use of either fungus, the tendency of any variety of the potato to resist fungus action may, by this mode, be easily decided. Since the preceding experiments were made, other northern and eastern varieties have been tested by fungoid solutions in contrast with some of the New Mexican varieties, giving like results, clearly demonstrating the superiority of the Sante Fé potatoes over all others thus far examined in respect to their powers of resisting fungoid and infusorial action.

It is not unusual to find a decayed spot in the center of potatoes otherwise apparently in good condition. A microscopic examination of

a portion of the diseased part will show that the decay commenced where the vascular bundles concentrate. See 2, Fig. 1. At that point the air is in greater volume than elsewhere.



When such spots are exposed to the atmosphere the fungus, blue mold, forms on the surface. This disease, therefore, has no relation to potato-rot, as ordinarily understood. F represents the mycelium (spawn) of blue mold, *Pennicillium glaucum*, and G that of potato-rot, *Peronospora infestans*.

The vascular bundles are much smaller in some varieties of pototoes than in others, and the texture of the cellular matter varies also. I think it probable that those varieties having the smallest air-passages, all other considerations being equal, will be the least affected by the fungus *Peronospora infestans*.

The air passages of the vascular bundles may be easily seen by the

naked eye. Cut a potato in two through its root stem; trim the surface so that some of its eyes will be in section; coat the surface with a solution of bichromate of potash; dry the surface with filtering-paper, then coat it all over several times with a strong alcoholic solution of iodine; the starch will become stained of a dark blue, while the vascular bundles will remain yellow. An examination will show that the air-ducts extend in every case to the eyes.

The stalks being simply an extension of them, 2 and 3 3 represent the combination of the spiral and dotted ducts; A, the root stem; B, a new growth or tuber from 1. Viewing their connection in this way, it will be seen that any germinal disease entering through the root-stem A will necessarily communicate through all the connecting links, viz: A, 2, 3 3, B. In my former paper on this subject, published in the monthly report alluded to, Fig. 22, page 508, represents a sectional drawing of the air-cells, showing their general character; S S represents the fruit of a slender light-colored myceleum, which I have found traversing the exterior and interior of the withered potato-stalks. In the more advanced stages the fruit has appendages in length about one and a half times the diameter of their seed-bags, S S. They have a thorn-like appearance, slightly wavy, and of amber color. To the naked eye they appear like fly-spots, and are very numerous. The conceptacles appear black, but when treated by nitric acid the dark color is removed and a cellular under surface of an amber color is exhibited. Thus far I have not been able to detect any sporangia in them. This may be accounted for from the fact that all the specimens I have examined had been dried up for a long period. 4 represents the fruit of *Peronospora infestans* on the leaves very highly magnified. The arrows represent the movements of the fungus matter; C, starch-cells, liberated by the fungoid solution and full of starch granules; D, the starch-cells of watery potatoes. They contain very little starch. E, the starch-cells as arranged in the potato. Some are void of starch, while some are well filled; others partially so. H represents the condition of starch in water when a fresh potato is grated down, or when the cellulose-cells are rotted away by fungus, as in the case stated.

The following mode of separating the vascular bundles from the potatoes, so that they may be viewed separately, will prove of interest to the vegetable physiologist:

Take a potato of medium size, remove the skin carefully without cutting the eyes; place it in a solution of sugar and water, (in the proportion of about two ounces of sugar to a pint of water,) and subject it to 75° F. for about twelve days. The fungus of fermentation will reduce the potato to a pulp, but the vascular bundles will be found apart and may be removed with a glass rod, and mounted in the usual way with gum or balsam. Under a power of about 100 diameters, they present a most singular, yet beautiful appearance. The pointed forms which extend to the eyes may be distinctly seen. This experiment is most successfully performed with the eastern and western potatoes. The starch-cells of the Santa Fé potatoes, for example, remain in a compact form, even when the nitrogenous matter has been destroyed by fungus or infusorials. The "air bundles," therefore, cannot be removed from them easily, which I consider another proof of their matured condition.

The following chemical direct mode of making observations of the position and structure of the air passages I sometimes employ: First, remove from a healthy potato a thin slice or disk. Pour over it concentrated nitric, muriatic, or dilute sulphuric acid, (caustic potash or soda will have the same effect,) when the starch will become transparent.

All of these alkalies and acids have the effect of dissolving the starch, but they have no effect on the air-passages, or vascular bundles; they are, therefore, rendered visible, when mounted in the usual manner and viewed by a sufficiently high power.

The Department has procured samples of every variety of potatoes from Santa Fé, New Mexico, to test practically, in the open field, their anti-fungoid qualities, in contrast with the usual varieties grown in that country.

In a letter addressed to this Department by Governor Arny, Santa Fé, New Mexico, February 17, 1873, he says: "We have not had any 'rot' in the potatoes of New Mexico. * * * I send two packages of alkali soil; this is a soil on which potatoes will not grow—abundance of tops but no 'tubers.'"

An excessively alkaline soil seems to have the same effect as very high manuring, viz, to produce stalks but no tubers.

MARKET PRICES OF FARM PRODUCTS.

FEBRUARY AND MARCH, 1873.

The following quotations represent the state of the market, as nearly as practicable, at the beginning of each month.

Articles.	February.	March.
NEW YORK.		
Flour, superfine State ..... per barrel..	$6 40 to $7 15	$5 90 to $6 65
extra State ..... do.....	7 35 to 8 65	7 10 to 8 40
superfine western ..... do.....	6 40 to 7 15	5 85 to 6 65
extra to choice western ..... do.....	7 30 to 13 00	6 75 to 12 75
southern ship'g, com. to choice..do.....	6 50 to 9 00	6 10 to 8 15
southern family, ord'y to choice..do.....	9 00 to 13 25	8 15 to 12 75
Wheat, No. 1 spring ..... per bushel..	1 75 to 1 78	1 69 to 1 75
No. 2 spring ..... do.....	1 62 to 1 72½	1 55 to 1 56
winter, red, western ..... do.....	1 90 to 2 00	1 80 to 1 95
winter, amber, western ..... do.....	2 00 to 2 05	1 85 to 2 00
winter, white, western ..... do.....	2 00 to 2 35	1 80 to 2 15
Rye ..... do.....	85 to 92	90 to 95
Barley ..... do.....	90 to 1 30	1 00 to 1 24
Corn ..... do.....	63½ to 67	61 to 65½
Oats ..... do.....	53 to 57½	48½ to 51½
Hay, retail qualities ..... per ton...	26 00 to 34 00	26 00 to 34 00
North River ..... do.....	23 00 to 24 00	22 00 to ———
Pork, mess ..... per barrel..	14 25 to ———	15 37½ to 15 50
extra prime ..... do.....	11 37½ to ———	——— to 12 00
prime mess ..... do.....	13 87½ to 14 00	14 25 to 14 50
Lard ..... per pound..	08 to 08¾	08¼ to 08¾
Beef, plain mess ..... per barrel..	4 00 to 11 75	9 00 to 11 75
extra ..... do.....	8 50 to 13 50	12 00 to 13 50
Butter, western ..... per pound..	15 to 30	18 to 31
State dairy ..... do.....	32 to 45	32 to 48
Cheese, western factory ..... do.....	13½ to 14½	12 to 15
State factory ..... do.....	13½ to 16½	13½ to 17
Cotton, ordinary to good ordinary..... do.....	18¼ to 20½	17¼ to 18½
low middling to good middli'g..do.....	20½ to 23½	19 to 23½
Tobacco, lugs, all grades ..... do.....	09¾ to 10½	——— to 08½
com. to med. leaf, all grades..do.....	10½ to 11½	9 to 10¾
Wool, American Saxony fleece ..... do.....	65 to 75	63 to 73

Market prices of farm products—Continued.

Articles.	February.	March.
NEW YORK—Continued.		
Wool, American merino, full blood....do.....	$0 65 to $0 75	$0 63 to $0 73
American, combing.....do.....	65 to 75	63 to 73
pulled.....do.....	44 to 65	42 to 61
California, spring clip, unwash'd..do.....	30 to 45	33 to 40
California, fall clip, unwashed..do.....	25 to 30	20 to 28
Texas.....do.....	28 to 42	22 to 40
BOSTON.		
Flour, western, superfine.....per barrel..	5 75 to 6 25	5 50 to 6 25
western extras.....do.....	7 00 to 10 00	6 75 to 9 00
western choice.....do.....	10 00 to 12 75	9 50 to 13 00
southern extras.....do.....	7 00 to 7 50	7 00 to 7 50
choice Baltimore.....do.....	10 00 to 12 00	10 00 to 12 00
Wheat.....per bushel..	1 65 to 2 00	1 65 to 2 00
Rye.....do.....	1 00 to 1 05	1 00 to 1 05
Barley.....do.....	90 to 1 20	90 to 1 20
Oats.....do.....	54 to 60	53 to 60
Corn, southern yellow.....do.....	73 to 75	77 to 78
western yellow.....do.....	73 to 75	77 to 78
Hay, eastern and northern.....per ton..	20 00 to 28 00	18 00 to 28 00
Beef, western mess.....per barrel..	12 00 to 12 50	12 00 to 12 50
western extra.....do.....	13 00 to 14 00	13 00 to 14 00
Pork, prime.....do.....	11 50 to 12 00	12 00 to 12 50
mess.....do.....	14 50 to 15 00	15 00 to 15 50
Lard.....per pound..	08½ to 09¼	08½ to 09¼
Butter, New York and Vermont.....do.....	18 to 37	18 to 38
western.....do.....	15 to 30	15 to 32
Cheese, N. Y. and Vt., factory.....do.....	13 to 16½	13 to 17
New York and Vermont dairy..do.....	12 to 15½	12 to 16½
Ohio factory, good to choice....do.....	13 to 16	13 to 16½
Cotton, ordinary to good ordinary....do.....	18¾ to 20¼	17 to 19
low middling to good middling do.....	20¼ to 25	19½ to 24
Tobacco, lugs.....do.....	10 to 10½	10 to 10½
common to medium leaf....do.....	11 to 12	11 to 12
Wool, Ohio and Pennsylvania.....do.....	62 to 70	56 to 64
Michigan.....do.....	60 to 66	55 to 60
other western.....do.....	59 to 64	55 to 59
pulled.....do.....	35 to 70	25 to 70
combing-fleece.....do.....	70 to 75	65 to 70
California.....do.....	23 to 50	20 to 27
Texas.....do.....	45 to 55	25 to 35
PHILADELPHIA.		
Flour, superfine.....per barrel..	4 50 to 5 25	5 00 to ———
Pennsylvania extra.....do.....	6 25 to 7 00	6 25 to 6 75
Pennsylvania, family.....do.....	8 50 to 9 25	8 50 to 8 75
western family.....do.....	7 87½ to 9 00	7 50 to 9 50
western fancy.....do.....	9 00 to 11 50	10 00 to 11 50
Wheat, winter, red, western.....per bushel..	1 90 to 1 97	1 88 to 1 97
winter, amber, western.....do.....	2 00 to 2 05	1 97 to 1 98
winter, white, western.....do.....	2 05 to 2 15	2 05 to 2 10
spring.....do.....	1 60 to 1 75	1 70 to 1 78
Rye.....do.....	87 to ———	85 to 88
Barley.....do.....	90 to 1 05	82 to 1 25
Oats, western, mixed.....do.....	46 to 47	46 to 47
western, white.....do.....	49 to 52	47 to 50
Corn, yellow.....do.....	58 to 60	58 to 60
white.....do.....	67 to 68	62 to 63
Hay, fresh, bale.....per ton..	30 00 to 36 00	27 00 to 30 00
common to fair shipping.....do.....	30 00 to 32 00	27 00 to 30 00

Market prices of farm products—Continued.

Articles.	February.	March.
PHILADELPHIA—Continued.		
Pork, mess.....per barrel..	$13 50 to $14 00	$13 75 to $15 25
prime mess.....do.....	12 00 to 12 50	13 00 to 13 25
Beef, western mess.....do.....	8 00 to 10 00	8 00 to 10 00
extra mess.....do.....	10 00 to 12 00	10 00 to 12 00
Warthman's city family.....do.....	16 00 to ———	16 00 to ———
Lard.....per pound..	7¾ to 11¼	8 to 11¼
Butter, choice.....do.....	32 to 40	28 to 40
good.....do.....	26 to 30	25 to 28
Cheese, New York factory.....do.....	15 to 16½	15 to 16
Ohio factory.....do.....	15 to 15½	15 to 16
Cotton, ordinary to good ordinary....do.....	18½ to 20½	18½ to 19
low middling to good middling..do.....	20½ to 23	19½ to 22½
Wool, Ohio X and XX.....do.....	66 to 70	62 to 63
Ohio combing.....do.....	78¼ to 80	76 to 80
Virginia fine and X.....do.....	65 to ———	59 to ———
Indiana tub-washed.....do.....	65 to 75	62 to 68
unwashed.....do.....	30 to 49	23 to 45
pulled.....do.....	53 to 57	50 to 56
BALTIMORE.		
Flour, superfine.....per barrel..	5 50 to 9 00	5 37 to 8 50
extra.....do.....	6 75 to 10 50	6 75 to 10 00
family and fancy.....do.....	8 50 to 12 50	8 25 to 12 00
Wheat, white, fair to choice.....per bushel..	2 00 to 2 35	1 90 to 2 25
amber, choice.....do.....	2 25 to 2 35	2 20 to 2 25
red, common to prime.....do.....	1 80 to 2 20	1 80 to 2 15
red, western.....do.....	1 78 to 2 02	1 70 to 1 90
Rye, common to prime.....do.....	95 to 1 01	75 to 85
Corn, white, southern.....do.....	65 to 66	65 to —
yellow, southern.....do.....	60 to 61	58 to 59
mixed, western.....do.....	61½ to —	58 to 58½
Oats, southern.....do.....	46 to 48	46 to 48
western.....do.....	43 to 46	46 to 49
Hay, western, good.....per ton...	28 00 to 33 00	26 00 to 30 00
Pork, mess.....per barrel..	13 75 to 14 00	15 75 to 16 00
Beef, Baltimore mess.....do.....	15 00 to 20 00	15 00 to 20 00
extra.....do.....	23 00 to 25 00	23 00 to 25 00
Lard.....per pound..	08 to 0 8¼	08¼ to 08⅝
Butter, New York.....do.....	30 to 40	38 to 42
choice, western.....do.....	30 to 35	30 to 35
good to prime western.....do.....	22 to 27	25 to 32
Cheese, eastern.....do.....	16 to 17	17 to 18
western.....do.....	15½ to 16	16½ to 17
Cotton, ordinary to good ordinary....do.....	17⅝ to 19¼	17½ to 18½
low middling to good middling..do.....	19⅛ to 21⅛	19½ to 20½
Tobacco, lugs,.....per cental..	7 50 to 9 00	7 50 to 10 00
common to medium leaf.....do.....	8 50 to 11 00	8 50 to 11 00
Wool, fleece, washed, com. to fine...per pound..	45 to 50	45 to 50
tub-washed.....do.....	55 to 60	55 to 60
unwashed.....do.....	35 to 38	35 to 38
pulled.....do.....	35 to 40	35 to 40
CINCINNATI.		
Flour, superfine.....per barrel..	6 00 to 6 75	5 50 to 6 25
extra.....do.....	7 75 to 8 15	7 40 to 7 75
family and fancy.....do.....	8 00 to 9 50	7 75 to 8 00
Wheat, red winter, No. 1.....per bushel..	1 77 to 1 78	1 73 to ———
red winter, No. 2.....do.....	1 72 to 1 73	1 68 to 1 70
white.....do.....	1 90 to 1 92	1 90 to 1 95

Market prices of farm products—Continued.

Articles.		February.			March.		
CINCINNATI—Continued.							
Rye	do	$0 84	to	$0 89	$0 80	to	$0 82
Barley	do	70	to	72	77	to	85
Corn	do	41	to	42	37	to	43
Oats	do	32	to	40	34	to	38
Hay, baled, No. 1	per ton	20 00	to	21 00	18 00	to	20 00
lower grades	do	16 00	to	18 00	15 00	to	17 00
Beef, plate	per barrel	13 00	to	———	14 00	to	14 50
Pork, mess	do	12 75	to	13 00	14 50	to	15 00
Lard	per pound	7⅜	to	8	8⅛	to	8¼
Butter, choice	do	22	to	25	28	to	33
good to prime	do	20	to	22	23	to	27
Cheese, factory	do	14½	to	15½	15½	to	16
pine-apple	do	———	to	25	22	to	23
Cotton, ordinary to good ordinary	do	16½	to	17⅞	15	to	17½
low middling to good middl'g	do	19	to	21	18⅝	to	21
Tobacco, lugs	do	8½	to	22	———	to	———
leaf	do	10	to	30	———	to	———
Wool, common to medium washed	do	50	to	53	48	to	50
medium to fine	do	53	to	55	50	to	52
tub-washed	do	60	to	———	55	to	60
unwashed, clothing	do	33	to	35	33	to	35
unwashed, combing	do	45	to	48	40	to	45
pulled	do	45	to	47	40	to	43
CHICAGO.							
Flour, white win'r, ex., f'r to choice	per barrel	7 50	to	10 25	7 90	to	10 50
red winter, extra	do	6 50	to	7 75	7 00	to	8 00
good to choice spring, extra	do	6 00	to	7 25	6 12½	to	7 00
spring, superfine	do	3 25	to	5 25	3 50	to	5 80
good to fancy Minnesota	do	6 75	to	8 00	7 00	to	8 00
Wheat, No. 1 spring	per bushel	1 31	to	———	———	to	———
No. 2 spring	do	1 25⅝	to	1 26½	1 18	to	1 19½
No. 3 spring	do	1 12	to	———	1 05½	to	1 06½
Rye, No. 2	do	68	to	———	64½	to	66
Barley, No. 2	do	75	to	78	70	to	72
Corn, No. 2	do	30½	to	30⅝	31	to	31½
Oats, No. 2	do	25½	to	25⅝	25¾	to	26¼
Hay, timothy	per ton	15 00	to	17 00	14 00	to	17 00
prairie	do	9 50	to	11 00	9 00	to	10 50
Pork, mess	per barrel	12 00	to	———	13 30	to	13 35
Beef, mess	do	9 50	to	10 00	9 50	to	10 00
Lard	per cental	7 27½	to	7 32½	7 57½	to	7 60
Butter, strictly choice dairy	per pound	23	to	28	27	to	32
good to choice roll	do	17	to	21	18	to	28
Cheese, New York factory	do	14	to	15½	16	to	17
Ohio factory	do	13	to	14	13½	to	15½
western factory	do	12	to	14	13½	to	15½
Wool, tub-washed	do	55	to	65	48	to	63
fleece-washed	do	45	to	58	43	to	55
unwashed	do	33	to	40	31	to	35
pulled	do	48	to	50	44	to	48
SAINT LOUIS.							
Flour, winter, superfine	per barrel	5 50	to	6 10			
winter, extras	do	6 25	to	7 35			
winter, choice and family	do	7 60	to	10 50			
Wheat, red winter, No. 1	per bushel	———	to	———			
red winter, No. 2	do	2 02	to	2 05			
spring, No. 2	do	1 35	to	1 45			
Rye, No. 2	do	74	to	78			
Barley	do	50	to	1 10			
Corn	do	31	to	39			
Oats	do	29	to	38			

Market prices of farm products—Continued.

Articles.	February.	March.
ST. LOUIS—Continued.		
Hay, shipping and choice timothy. per ton	$24 00 to $26 00	
prime ..... do	20 00 to ———	
Pork, mess ..... per barrel	12 75 to 13 00	
Beef, mess ..... do	14 00 to ———	
Lard ..... per pound	7 to 9	
Butter, roll, prime to strictly choice ... do	18 to 25	
choice packed ..... do	25 to 30	
Cheese, factory ..... do	15 to 16½	
Cotton, middling ..... do	18½ to 19½	
Wool, tub-washed ..... do	57 to 60	
fleece, washed ..... do	45 to 55	
unwashed, clothing ..... do	33 to 38	
unwashed, combing ..... do	42 to ———	
NEW ORLEANS.		
Flour, superfine ..... per barrel	6 85 to 7 25	$6 62½ to $———
extras ..... do	7 50 to 9 00	6 90 to 8 50
choice ..... do	9 25 to 11 25	9 00 to 11 25
Corn, white ..... per bushel	75 to 78	65 to 68
yellow ..... do	75 to ———	68 to 70
Oats ..... do	55 to ———	50 to 52
Hay, choice ..... per ton	55 00 to ———	29 00 to 30 00
prime ..... do	——— to ———	25 00 to 26 00
Pork, mess ..... per barrel	14 50 to 15 50	14 50 to 15 25
extra prime ..... do	13 50 to ———	——— to ———
Beef, Texas ..... do	11 50 to 12 00	11 50 to 12 50
western ..... do	16 00 to 17 00	15 00 to 16 50
Lard ..... per pound	8 to 9¾	8 to 9½
Butter, choice western ..... do	25 to 27	25 to 28
choice Goshen ..... do	40 to 42	42 to ———
Cheese, choice factory ..... do	15 to ———	16 to 17
New York cream ..... do	18 to ———	19 to ———
Cotton, ordinary to good ordinary .... do	16½ to 18½	15⅝ to 18
low middling to good middling. do	18⅞ to 21	18⅝ to 20½
Tobacco, lugs ..... do	8 to 9½	8 to 9
low-leaf ..... do	9 to 10	9 to 10
medium-leaf ..... do	10 to 11½	10 to 11
Wool, lake ..... do	45 to ———	40 to 42
Louisiana, clean ..... do	35 to ———	30 to 35
SAN FRANCISCO.		
Flour, superfine ..... per barrel	4 50 to 4 75	——— to 5 00
extra ..... do	5 00 to 5 25	5 25 to 5 50
higher grades ..... do	5 50 to 6 00	——— to 5 75
Wheat, State ..... per cental	1 75 to 2 00	1 50 to 1 90
Oregon ..... do	1 80 to 2 00	1 75 to 1 85
Barley ..... do	1 15 to 1 45	1 38 to 1 40
Oats ..... do	2 00 to 2 15	2 00 to 2 25
Corn, white ..... do	1 25 to 1 30	1 25 to ———
yellow ..... do	1 15 to 1 20	1 25 to ———
Hay, State ..... per ton	22 50 to ———	15 00 to 22 50
Pork, mess ..... per barrel	18 00 to 20 00	18 00 to 19 00
prime mess ..... do	17 50 to 18 00	17 50 to 18 00
Beef, mess ..... do	10 00 to 11 50	10 00 to 12 00
family mess ..... half barrel	9 00 to 10 00	9 00 to 10 00
Lard ..... per pound	9 to 11	9½ to 11
Butter, overland ..... do	15 to 35	15 to 30
California ..... do	40 to 50	30 to 32½
Oregon ..... do	18 to 20	18 to 20
Cheese ..... do	12 to 16	12 to 16
Wool, native ..... do	12 to 30	12 to 20
California ..... do	25 to 28	25 to 28
Oregon ..... do	25 to 28	25 to 28

LIVE-STOCK MARKETS.

	February.			March.		
NEW YORK.						
Cattle, extra beeves.....per cental..	$13 50	to	$14 00	$13 50	to	$14 50
good to prime.....do.....	12 00	to	12 50	12 00	to	13 00
common to fair.....do.....	10 00	to	11 25	11 00	to	11 75
poorest grade.....do.....	8 00	to	9 50	8 50	to	10 00
average.....do.....	11 25			11 50		
BOSTON.						
Cattle, choice, live weight.....per cental..	7 75	to	8 00	7 75	to	8 00
extra, live weight.....do.....	7 25	to	7 50	7 00	to	7 50
first quality, live weight.....do.....	6 00	to	7 00	6 25	to	6 50
second quality, live weight....do.....	4 75	to	5 50	4 25	to	5 25
third quality, live weight....do.....	3 50	to	4 00	3 50	to	4 00
working oxen.....per pair..	100 00	to	250 00	100 00	to	250 00
milch cows with calves.....per head..	40 00	to	60 00	35 00	to	60 00
milch cows, extra.....do.....	65 00	to	85 00	65 00	to	85 00
farrow cows.....do.....	20 00	to	35 00	———	to	———
Hogs, western, fat.....per cental..	5 25	to	———	5 50	to	5 75
Sheep, spring lambs.....do.....	6 75	to	8 00	6 50	to	8 50
PHILADELPHIA.						
Cattle, extra beeves.....per cental..	8 00	to	8 25	———	to	———
choice.....do.....	7 00	to	7 75	7 50	to	7 87
common to good.....do.....	4 50	to	6 50	5 00	to	7 50
Sheep, common to choice.....do.....	4 50	to	8 00	2 00	to	8 00
Hogs, corn-fed, net.....do.....	6 50	to	———	7 75	to	———
BALTIMORE.						
Cattle, best beeves.....per cental..	6 25	to	7 50	6 00	to	7 50
first quality.....do.....	5 00	to	6 25	5 50	to	6 50
medium, or good fair quality..do.....	4 00	to	5 00	4 75	to	5 50
ordinary, thin steers, oxen, or cows.....per cental..	2 75	to	4 00	3 00	to	4 75
general average.....do.....	5 25			5 50		
extreme range.....do.....	2 75	to	7 50	3 00	to	7 50
sales mostly from.....do.....	4 62½	to	5 75	5 25	to	6 25
Sheep.....do.....	4 75	to	8 00	5 00	to	7 50
Hogs....net.....do.....	6 25	to	6 75	7 25	to	7 87½
CINCINNATI.						
Cattle, shipping grades.....per cental..	5 00	to	5 50	5 00	to	5 50
prime to extra butcher's grades do.....	4 25	to	5 00	4 25	to	5 25
medium.....do.....	3 25	to	4 00	3 25	to	4 00
inferior.....do.....	2 50	to	3 00	2 75	to	3 00
Sheep, prime to extra.....do.....	4 50	to	5 50	4 50	to	5 75
common to good.....do.....	3 00	to	4 00	3 00	to	4 00
Hogs, butcher's grades.....do.....				5 25	to	5 35
shipping grades.....do.....				4 85	to	5 10
good to prime.....do.....				4 50	to	4 60
CHICAGO.						
Cattle, extra graded steers, average 1,400 pounds.....per cental..	6 15	to	6 35	6 10	to	6 35
choice beeves, fat, well-formed, 3 to 5 years old, 1,300 to 1,400 pounds.....per cental..	5 75	to	6 00	5 60	to	5 90

Live stock market—Continued.

Articles.	February.	March.
Cattle, good beeves, well fattened, 1,200 to 1,300 pounds.....per cental..	$5 25 to $5 65	$5 25 to $5 40
medium grades, steers in fair flesh, 1,100 to 1,250 pounds...per cental..	4 50 to 5 00	4 75 to 5 00
butcher's stock, common to medium steers and good to extra cows, 800 to 1,100 pounds.....per cental..	3 50 to 4 25	3 50 to 4 50
common cattle, decently fleshed, 700 to 1,050 pounds.....per cental..	3 00 to 4 00	3 25 to 4 25
inferior	1 75 to 2 50	1 75 to 2 75
Texans, north summered..per cental..	2 50 to 3 50	2 50 to 3 50
Texans, corn fed.....do.....	3 75 to 4 50	3 75 to 4 50
Sheep, common to medium.....do.....	3 50 to 4 50	3 75 to 4 50
good to choice.....do.....	4 75 to 5 75	4 75 to 5 50
Hogs, medium.....do.....	.....	4 65 to 4 80
good to strictly choice.....do.....	3 85 to 4 25	4 85 to 5 00
SAINT LOUIS.		
Cattle, choice native-blooded steers, 1,300 to 1,600 pounds.....per cental..	5 50 to 6 00	
prime native-blooded, 2d class, 1,150 to 1,400 pounds.....	4 50 to 5 00	
good 3d grade native, 1,050 to 1,300 pounds.....per cental..	4 00 to 4 50	
fair butcher steers, 1,000 to 1,200 pounds.....per cental..	3 50 to 4 00	
thrifty stock steers, 900 to 1,300 pounds.....per cental..	3 50 to 4 00	
light, uneven stock steers, 500 to 850 pounds.....per cental..	2 50 to 3 00	
choice corn-fed fat Texans.....do....	4 00 to 4 50	
calves per head.....do....	6 00 to 10 00	
cows with calves.....do....	25 00 to 50 00	
NEW ORLEANS.		
Cattle, Texans, corn-fed, 1st quality..per cental..	8 00 to 11 00	8 00 to 11 00
Texans, corn-fed, 2d quality..per head..	40 00 to 50 00	40 00 to 50 00
Western beeves, net.....per cental..	10 00 to 12 50	10 00 to 12 50
milch cows, choice.....per head..	80 00 to100 00	80 00 to100 00
lower grades.....do....	50 00 to 80 00	50 00 to 80 00
calves .....do.....	8 00 to 12 00	8 00 to 12 00
yearlings.....do.....	10 00 to 14 00	10 00 to 14 00
Hogs .....per cental..	5 50 to 6 50	5 50 to 6 50
Sheep, 1st quality.....do.....	5 00 to 7 00	5 00 to 7 00
2d quality.....do.....	3 00 to 4 05	3 00 to 4 05
3d quality .....do.....	2 00 to 2 10	2 00 to 2 10

FOREIGN MARKETS.

WHEAT.—The London weekly average prices of wheat during January and February ranged from 58*s.* 5*d.* to 58*s.* 2*d.* per quarter. The standing quotations of the Mark Lane Express for the London market, during the two months, were as follows: British white wheat, 50*s.* to 67*s.* per quarter; British red wheat, 50*s.* to 63*s.*; American, 57*s.* to 61*s.*;

California, 66*s.*; Chilian white, 67*s.*; German, 59*s.* to 72*s.*; Australian, 64*s.* to 67*s.*; Russian, 47*s.* to 60*s.*

In Liverpool during the two months American white wheat ranged from 13*s.* to 14*s.* per cental; red winter and southern, 12*s.* to 12*s.* 6*d.*; No. 1 spring, 12*s.* to 12*s.* 6*d.*; No. 2 spring, 11*s.* 3*d.* to 12*s.*; Canadian white, 12*s.* 6*d.* to 14*s.*; Canadian red, 12*s.* to 12*s.* 6*d.*; Californian white, 11*s.* 11*d.* to 13*s.* 9*d.*; Chilian white, 12*s.* to 12*s.* 7*d.*; French white, 12*s.* 6*d.* to 12*s.* 9*d.*; French red, 11*s.* 7*d.* to 12*s.* 1*d.*; Spanish white, 12*s.* 6*d.* to 12*s.* 8*d.*; Danubian, 7*s.* to 9*s.* 10*d.*; Egyptian, 8*s.* 10*d.* to 11*s.* In Paris the wheat trade has shown no remarkable fluctuations. The extreme range from inferior to the best white being from 49*s.* to 58*s.* 6*d.* per quarter.

At the close of 1872 the whole stock of wheat and flour on hand in the British islands was equal to 1,676,983 quarters of wheat, or about one month's supply, showing a reduction of 403,626 quarters as compared with 1871. The stocks on hand reported in Russia, Germany, and America, being below those of the previous year, it was hoped that France and other southern countries would supply the deficit. Wheat seeding was delayed by unfavorable weather, and it was thought would be largely postponed till February. The general conditions of January and February stimulated vegetation. The temperature was unusually high, while rain was so abundant that many clay lands were entirely saturated, giving rise to the fear that the wheat already sown would rot in the ground. Newly thrashed samples were quite indifferent, while the lessening supply of British wheat seemed to leave the market measurably clear for foreign imports. Among the earlier arrivals from abroad were noted some splendid samples of California white wheat, weighing 66 pounds to the bushel, and held at only 65*s.* per quarter in London. Unusually high prices at Marseilles and other Mediterranean ports gave some uneasiness in regard to the diversion of the Mediterranean wheat trade from England. As the winter months passed the fears as to rotting wheat already sown were, to some extent, realized, but the anticipated deficit bids fair to be amply supplied by foreign imports. The British deficiency, up to harvest, was estimated at 5,334,000 quarters, of which at least 1,100,000 quarters were expected from California, and nearly as much from Australia. The crops of Belgium and Germany were reported as promising.

Flour.—In London the rates of British flour continued uniform during the first two months of 1872; best town households, 50*s.* to 57*s.* per sack of 280 pounds; best county households, 44*s.* to 47*s.*; Norfolk and Suffolk, 38*s.* to 43*s.*; American flour, per barrel, 26*s.* to 29*s.*; extra, 31*s.* to 34*s.* In Liverpool the standing quotations for English and Irish superfines were 40*s.* to 42*s.* per sack of 280 pounds; English and Irish extra, 43*s.* to 51*s.*; French, 48*s.* to 53*s.* 6*d.*; Spanish, 47*s.* to 47*s.* 6*d.*; Trieste and Hungarian, 64*s.* to 74*s.*; Chilian and California, 44*s.* 6*d.* to 50*s.*; American, western State, 28*s.* 6*d.* to 31*s.*; extra State, 30*s.* to 34*s.*; Baltimore and Philadelphia, 30*s.* to 35*s.*; Ohio, 31*s.* to 35*s.*; Canadian, 32*s.* to 34*s.* In Paris during January flour was quite steady, between 42*s.* 3*d.* to 47*s.* 5*d.* It declined the third week in February to 40*s.* 6*d.* to 44*s.* 10*d.*, but rose the following week to 42*s.* 3*d.* to 46*s.* 9*d.*

Indian Corn.—The standing quotations of the Mark Lane (London) market for American white were 32*s.* to 34*s.* per quarter; for yellow American, 28*s.* to 29*s.* In Liverpool the standing rates were as follows: American white, per 480 pounds, 31*s.* to 31*s.* 6*d.*; American yellow, 28*s.* 6*d.* to 28*s.* 9*d.*; Trieste, 30*s.* to 30*s.* 6*d.*; Danubian, 28*s.* 9*d.* to 29*s.* 6*d.*

WOOL.—The London market was, during the earlier weeks of 1873 quite firm for English fine and "deep-grown" wools, but this demand subsequently declined. The range of price was as follows: Southdown hoggets, per pound, 1*s.* 10*d.* to 1*s.* 11*d.*; Southdown ewes and wethers, 1*s.* 8*d.* to 1*s.* 9½*d.*; Leicester ewes and wethers, 1*s.* 11*d.* to 2*s.* 1½*d.*; Kent fleeces, 1*s.* 11½*d.* to 2*s.* 1*d.*

BUTTER.—Prices ranged in London, for Dorset, from 148*s.* to 160*s.* per cwt.; Friesland, 116*s.* to 148*s.*; Jersey, 102*s.* to 140*s.*; all kinds experience a heavy decline toward the close of February.

CHEESE.—In London cheese ranged as follows: Cheshire, 56*s.* to 86*s.* per cwt.; double Gloucester, new, 60*s.* to 80*s.*; Cheddar, 68*s.* to 90*s.*; American, 50*s.* to 76*s.*